# **HEALTH AND SAFETY PLAN**

Site Investigation and Remediation
Former Kerr-McGee Westlake Natural Gasoline Plant
Maryneal, Nolan County, Texas

## Prepared for:

Anadarko Petroleum Corporation 1201 Lake Robbins Drive The Woodlands, Texas 77380

## Prepared by:

AECOM 17300 Dallas Parkway, Suite 1010 Dallas, Texas 75248

Health and Safety Plan Expiration Date: November 2015

Project No: 60335556

## **HEALTH AND SAFETY PLAN APPROVAL**

This Health and Safety Plan (HASP) was prepared for employees performing a specific, limited scope of work. It was prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the project site. While it is not possible to discover, evaluate, and protect in advance against all possible hazards, which may be encountered during the completion of this project, adherence to the requirements of the HASP will significantly reduce the potential for occupational injury.

By signing below, I acknowledge that I have reviewed and hereby approve the HASP for the Westlake Natural Gasoline Plant project in Maryneal, Texas. This HASP has been written for the exclusive use of AECOM, its employees, and subcontractors. The plan is written for specified site conditions, dates, and personnel, and must be amended if these conditions change.

| Written by:  |                        |
|--|------------------------|
| Dan Schillings, REM District Safety Manager (210) 601-4129 | November 14, 2014 Date |
| Concurrence by:  Kut Walha  Kurt Webber, P.G.              | November 17, 2014 Date |
| Project Manager  |                        |

(972) 735-7054

## TABLE OF CONTENTS

| 1.0 II | NTRODUCTION                            | 1-1 |
|--------|--|-----|
| 1.1    | General                                | 1-1 |
| 1.2    | Policy Statement                       | 1-1 |
| 1.3    | Drug and Alcohol Testing               |     |
| 1.4    | References                             |     |
|        | ITE INFORMATION AND SCOPE OF WORK      |     |
|        |  |     |
| 2.1.1  | Site Information                       |     |
| 2.1.1  | •                                      |     |
| 2.1.2  | Scope Of Work                          |     |
| 2.2.1  | •                                      |     |
| 2.2.1  |  |     |
| 2.2.3  | e e e e e e e e e e e e e e e e e e e  |     |
| 2.2.4  |  |     |
| 2.2.5  |  |     |
| 2.2.6  | · · · · · · · · · · · · · · · · · · ·  |     |
| 2.2.7  | Assumptions                            | 2-6 |
| 3.0 P  | ROJECT HEALTH AND SAFETY ORGANIZATION  | 3-1 |
| 3.1    | Project Manager – Kurt Webber          | 3-1 |
| 3.2    | Safety Professional – Dan Schillings   | 3-1 |
| 3.3    | Site Supervisor – Kurt Webber          |     |
| 3.3.1  | 1                                      |     |
| 3.3.2  | 1                                      |     |
| 3.3.3  | Qualifications                         | 3-1 |
| 3.4    | Site Safety Officer –Kurt Webber       | 3-1 |
| 3.4.1  | Responsibilities                       | 3-1 |
| 3.4.2  | Authority                              | 3-2 |
| 3.4.3  | Qualifications                         | 3-2 |
| 3.5    | Employees                              |     |
| 3.5.1  | 1 2 1                                  |     |
| 3.5.2  |  |     |
| 3.6    | Subcontractors                         |     |
| 3.7    | Visitors                               | 3-3 |
| 4.0 S. | AFETY PROGRAMS                         | 4-1 |
| 4.1    | HAZWOPER Qualifications                | 4-1 |
| 4.2    | Site-Specific Safety Training          | 4-1 |
| 4.2.1  | Competent-Person Training Requirements | 4-2 |
| 4.3    | Hazard Communication                   | 4-2 |
| 4.3.1  | Container Labeling                     | 4-2 |
| 4.3.2  |  |     |
| 4.3.3  |  |     |
| 4.4    | Confined Space Entry                   | 4-2 |

# **TABLE OF CONTENTS (continued)**

| 4.5        | Hazardous, Solid, Or Municipal Waste                     | 4-3  |
|------------|--|------|
| 4.6        | General Safety Rules                                     | 4-3  |
| 4.6        | .1 Housekeeping  | 4-3  |
| 4.6        | .2 Smoking, Eating, or Drinking                          | 4-3  |
| 4.6        | .3 Personal Hygiene                                      | 4-3  |
| 4.6        | .4 Buddy System  | 4-3  |
| 4.6        | .5 Weather   | 4-3  |
| 4.6        | <b>6</b>   |      |
| 4.6        | 5 · · · · · · · · · · · · · · · · · · ·                  |      |
| 4.6        | .8 Vehicle Inspection                                    | 4-9  |
| 4.6        | $\mathcal{E}$  |      |
| 4.6        |  |      |
| 4.6        | $\epsilon$   |      |
| 4.6        |  |      |
| 4.7        | Clothing   | 4-9  |
| 4.8        | Use of Utility Knives or Other Open-Bladed Cutting Tools | 4-10 |
| 4.9        | Equipment Safety Cards                                   | 4-10 |
| 4.10       | Stop Work Authority                                      | 4-10 |
| 4.11       | Client Specific Safety Requirements                      |      |
| 4.12       | Environmental Compliance and Management                  |      |
|            | 2.1 Air Emissions  |      |
|            | 2.2 Hazardous Waste Management                           |      |
| 4.1        | 8  |      |
|            | 2.4 Wetlands Protection                                  |      |
|            | 2.5 Critical Habitat Protection.                         |      |
|            | HAZARD ASSESSMENT  |      |
| 5.1        | Hazard Analysis  |      |
|            | .1 Unanticipated Work Activities/Conditions              |      |
| 5.2        | Environmental Contaminant Exposure Hazards               |      |
| 5.2        | •  |      |
| 5.2        |  |      |
|            | .3 Chromium and Compounds                                |      |
| 5.2        |  |      |
| 5.2        |  |      |
| 5.2        |  |      |
| 5.2        |  |      |
| 5.3        | Physical Hazards   |      |
| 5.4        | Biological Hazards                                       |      |
| 5.4<br>5.4 | C  |      |
| 5.4        | 1  |      |
| 5.4        |  |      |
| 5.5        | Radiological Hazards                                     |      |
|            |  |      |
| 5.6        | Ultraviolet Hazards                                      |      |
| 5.7        | Other Hazards  | 5-7  |

# **TABLE OF CONTENTS (continued)**

| 6.0          | ACTIVITY SPECIFIC REQUIREMENTS                    | 6-1  |
|--------------|---|------|
| 6.1          | Supplemental Safety Procedures                    | 6-1  |
| 6.1.         | 1 Subsurface Utilities                            | 6-1  |
| 6.1.         | 2 Hazardous Noise Environments                    | 6-1  |
| 6.1.         | 3 Slip, Trips and Fall Hazards                    | 6-2  |
| 6.1.         | 4 Drill Rig Operations                            | 6-2  |
| 6.1.         | 5 Manual Lifting                                  | 6-2  |
| 6.1.         |   |      |
| 6.1.         | 7 Groundwater Level Static Checks                 | 6-2  |
| 6.1.         | $\mathcal{E}$                                     |      |
| 6.1.         | 1 6   |      |
| 6.1.         | 10 Heavy Equipment Operations                     | 6-3  |
| 6.2          | Exposure Monitoring Procedures                    | 6-3  |
| 6.2.         | 1 Real-Time Exposure Measurement                  | 6-3  |
| 6.2.         | 2 Biological Hazard Injury and Illness Prevention | 6-6  |
| 6.2.         |   |      |
| 6.2.         | 4 Environmental Protection                        | 6-8  |
| <b>7.0</b> ] | PERSONAL PROTECTIVE EQUIPMENT                     | 7-1  |
| 7.1          | Personal Protective Equipment                     |      |
| 7.2          | Respiratory Protection                            | 7-1  |
| 7.3          | PPE Doffing and Donning Information               |      |
| 7.4          | Decontamination                                   |      |
| 7.4.         |   |      |
| 7.4.         | <u> </u>  |      |
| 7.4.         |   |      |
| 8.0          | SITE CONTROL                                      | 8-1  |
| 8.1          | General   |      |
| 8.2          | Controlled Work Areas                             |      |
| 8.2.         |   |      |
| 8.2.         |   |      |
| 8.2.         |   |      |
| 8.3          | Site Access Documentation                         |      |
| 8.3.         |   |      |
| 8.4          | Site Security                                     |      |
|              | ·   |      |
|              | EMERGENCY RESPONSE PLANNING                       |      |
| 9.1          | Emergency Action Plan                             |      |
| 9.1.         | 8 ,   |      |
| 9.1.<br>9.1. |   |      |
| 9.1.<br>9.1. | •   |      |
| 9.1.         |   |      |
|              | DEDSONNEL ACKNOWLEDGEMENT                         | 10.1 |
|              |   |      |

Attachment A

## **TABLE OF CONTENTS (continued)**

## **ATTACHMENTS**

Task Hazard Analyses

| Att         | achment B       | Material Safety Data Sheets   |     |
|-------------|-----------------|---|-----|
| Att         | achment C       | Equipment Safety Cards  |     |
| Att         | achment D       | Site-Specific Spill Reporting Card                                      |     |
| Att         | achment E       | Client-Specific Health & Safety Guidelines                              |     |
|             |                 | <u>FIGURES</u>  |     |
| Figure 2-1: | Site Map        |   | 2-4 |
| Figure 2-2: | Site Location I | Мар   | 2-5 |
| Figure 8-1: | Drilling Site C | ontrol Layout   | 8-4 |
| Figure 8-2: | Example Ea      | rth Moving Site Control Layout  | 8-1 |
| Figure 9-1: | Emergency Ca    | re Hospital Route/Detail Maps   | 9-6 |
| Figure 9-2: | Occupational O  | Clinic Route/Detail Maps  | 9-7 |
|             |                 | TABLES  |     |
| Table 4-1:  | Temperature A   | djustment Factors   | 4-5 |
| Table 4-2:  | Work Rest Scho  | edule   | 4-6 |
|             |                 | nd Treatment of Heat-Related Illness                                    |     |
| Table 6-1:  | Monitoring Par  | ameters and Equipment   | 6-4 |
|             | _               | cedures and Action Levels for Intrusive Activities (including Sampling) |     |
| Table 6-3:  | Air Monitoring  | During Remediation /Excavation  | 6-5 |
|             | _               | During Remediation /Excavation (Perimeter)                              |     |
| Table 6-5:  | NORM Monito     | ring Procedures and Action Levels                                       | 6-6 |
| Table 6-6:  | Hazardous Plan  | t Identification Guide  | 6-7 |
| Table 7-1:  | Personal Protec | tive Equipment  | 7-1 |
| Table 7-2:  | Respiratory Pro | tection (Shaker and Remedial Activities)                                | 7-1 |
|             |                 | nning   |     |
|             |                 | ortable Quantities  |     |
| Table 9-3:  | Emergency Cor   | ntacts  | 9-5 |

## 1.0 INTRODUCTION

This Health and Safety Plan (HASP) (including Attachments A - E) provides a general description of the levels of personal protection and safe operating guidelines expected of each employee or subcontractor associated with the environmental services being conducted during the Westlake Natural Gasoline Plant project located in Maryneal, Texas. This HASP also identifies chemical and physical hazards known to be associated with the AECOM-managed activities addressed in this document.

HASP Supplements will be generated as necessary to address any additional activities or changes in site conditions, which may occur during field operations.

#### 1.1 GENERAL

The provisions of this HASP are mandatory for all AECOM personnel engaged in fieldwork associated with the environmental services being conducted at the subject site. A copy of this HASP, any applicable HASP Supplements and the U.S. Operations Safety, Health, and Environmental (SH&E) Manual shall be maintained on site and available for review at all times. Record keeping will be maintained in accordance with this HASP and the applicable Standard Operating Procedures (SOPs). In the event of a conflict between this HASP, the SOPs and federal, state, and local regulations, workers shall follow the most stringent/protective requirements.

#### 1.2 POLICY STATEMENT

It is the policy of AECOM to provide a safe and healthy work environment for all of its employees. AECOM considers no phase of operations or administration is of greater importance than injury and illness prevention. Safety takes precedence over expediency or shortcuts. Every accident and every injury is avoidable. At AECOM, we believe every accident and every injury is avoidable. We will take every reasonable step to reduce the possibility of injury, illness, or accident. This policy is detailed in the AECOM SH&E, *Life Saving Principles*.

The practices and procedures presented in this HASP and any supplemental documents associated with this HASP are binding on all AECOM employees while engaged in the subject work. In addition, all site visitors shall abide by these procedures as the minimum acceptable standard for the work site. Operational changes to this HASP and supplements that could affect the health or safety of personnel, the community, or the environment will not be made without prior approval of the AECOM Project Manager (PM) and the assigned AECOM Safety Professional.

#### 1.3 DRUG AND ALCOHOL TESTING

The use of and being under the influence of drugs or alcohol is forbidden on AECOM project sites. Additionally Anadarko requires that all workers on their project sites be on a drug and alcohol testing program including preassignment, random, and for cause testing.

## 1.4 REFERENCES

This HASP conforms to the regulatory requirements and guidelines established in the following documents:

- Title 29, Part 1910 of the Code of Federal Regulations (29 CFR 1910), Occupational Safety and Health Standards (with special attention to Section 120, Hazardous Waste Operations and Emergency Response).
- Title 29, Part 1926 of the Code of Federal Regulations (29 CFR 1926), Safety and Health Regulations for Construction.
- National Institute for Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard (USCG)/EPA,
   Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Publication No.
   85-115, 1985.

The requirements in this HASP also conform to AECOM's Corporate SH&E Program requirements as specified in the U.S. Operations SH&E Manual, a copy of which will be maintained on site at all times.

#### 2.0 SITE INFORMATION AND SCOPE OF WORK

AECOM will conduct environmental services at the site. Work will be performed in accordance with the applicable Statement of Work (SOW) and associated Work Plans developed for the site. Deviations from the listed SOW will require that a Safety Professional review and changes made to this HASP, to ensure adequate protection of personnel and other property.

The following is a summary of relevant data concerning the site, and the work procedures to be performed. The Work Plan prepared by AECOM as a companion document to this HASP provides significantly greater details concerning both site history and planned work operations.

## 2.1 SITE INFORMATION

This section provides a general description and historical information associated with the site.

## 2.1.1 General Description

This Westlake Natural Gasoline Plant was developed on a 44 acre tract of land about 4.5 miles north of the town of Maryneal in Nolan County, Texas. The site is located in the W/2 of NW/4 of SE/4 and E/2 of NE/4 of SW/4 of Section 76, Block X, T&P RR Co. Survey.

#### 2.1.2 Site History

The West Lake Gas Plant is believed to have been originally constructed by Westlake Natural Gasoline Company in the mid 1950's. El Paso Natural Gas Company (EPNG) was operating the plant in 1956. The connection between Westlake Natural Gasoline Company and EPNG is not clear. This processing facility was developed on a 44 acre tract of land approximately 4.5 miles north of the town of Maryneal, Texas and about ten miles south of Sweetwater, Texas.

In 1988, Sun Oil Company (Oryx Corporation) bought the inactive gas plant for its existing pipeline. All idle processing equipment was removed from the plant site.

The plant processed and treated upstream natural gas brought in by pipeline from surrounding oil and gas production facilities. The process involved separation of oil and natural gas into various product streams such as propane, methane, high gravity crude, and condensate oil. Oil and gas were sold and transported by pipeline and transport trucks. Water generated at the plant was discharged into an on-site disposal well and on-site unlined evaporation ponds or pits.

Historical spills of hydrocarbons and Polychlorinated Biphenyls (PCBs) as well as salt water infiltration are suspected at the site.

#### 2.2 SCOPE OF WORK

The purposes of the project are to assess and delineate the impact of PCBs on surface soils; assess groundwater quality and to initiate remediation efforts if necessary.

The strategic objectives of this proposal are as follows:

Conduct sufficient soil sampling to define the lateral and vertical extents of the soil impacted with PCBs and to drill monitor wells as necessary;

Implement random PCB soil sampling in the North and South Disposal Pits and across the site to determine if PCB impact above 1 ppm is present outside the Former Remediation Area and the South Disposal Pit;

Prepare and submit a work plan for the remediation of PCB impacted soil at the site and submit the work plan to the USEPA and RRC; and

Initiate remediation and restoration activities including leveling pits, removing debris, abandoning wells and excavation of contaminated soil for disposal off site as necessary.

Assess surface soils of that portion of the 69 Ranch which lies adjacent to and immediately south of the former plant site for potential constituents of concern.

#### 2.2.1 Field Tasks

The specific field tasks being implemented at the site include:

- Soil samples will be collected to further delineate the horizontal extent of the former remediation area.
   If soil with PCB concentrations greater than 1 mg/kg are encountered, additional delineation sampling will be required.
- Additional randomly spaced soil borings are proposed in the South Disposal Pit to determine if other portions of the pit are impacted. The borings will be installed using direct push technology (DPT) to an approximately depth of three feet below the ground surface. A maximum of three soil samples will be collected from each boring and analyzed for PCBs. Soil samples collected will be submitted to Lancaster Laboratories (Lancaster) in Lancaster, Pennsylvania. Complete delineation of PCB concentrations greater than 1 mg/kg in the South Disposal Pit will be proposed after the results of this investigation. (Number of soil samples to be collected and analyzed = 6)
- Based on the presence of PCBs in the South Disposal Pit, soils sampling will be performed in the
  adjacent North Disposal Pit. Random soil borings will be installed in the North Disposal Pit for the
  collection of soil samples. A maximum of three samples will be collected from each boring using DPT.
  Borings will be approximately three feet in depth and will be installed using a direct push technology.
- Random soil sample locations will be selected across the site to sample for PCB impacted soil. Samples will be located and staked by a registered surveyor prior to sampling. Samples will be collected from the surface to approximately 6-inches in depth. Hand tools will be used for sampling purposes.
- Trash located in west of the site in a gully on the Dickson Ranch property will be removed and transported to a landfill. A track hoe will be used to remove the trash and place it into roll-off containers prior to disposal. The material will then be transported to a landfill for disposal. If oil field piping is encountered during the activities, Naturally-Occurring Radioactive Materials (NORM) screening may be required, if the material is determined to have NORM, additional precautions and procedures for disposal may be required. If materials are encountered that appear to contain asbestos containing material (ACM), sampling by a licensed person may be required. If the material is determined to be ACM additional precautions and removal procedures may be required.
- Asbestos containing material found on site, including floor tile covering concrete slabs, will be removed
  from the site. The subcontractor performing the asbestos removal will prepare a Health and Safety Plan
  for the removal tasks to supplement this plan.
- Plug and abandon water wells. The wells will be properly plugged and abandoned by a Texas licensed
  water well driller. Three wells are unused wells on the Dickson Ranch and will require an off-site
  access agreement.
- Monitor wells will be installed to determine the lateral extent of the free product in water well WW-8. The monitor wells will be installed approximately 30 feet from WW-8 in the up-gradient, side-gradient and down-gradient directions. The wells will be installed by a licensed monitor well installer to depths of approximately 140 feet below ground surface (bgs). A maximum of three soil samples will be collected from each boring and submitted to Lancaster Laboratory for analyses of BTEX, TPH and pH. Each well will be constructed of 4-inch diameter PVC with 20 feet of machined slotted well screen placed from approximately 120 feet to 140 feet bgs. Each well will be developed and the groundwater will be sampled. The groundwater samples will be submitted to Lancaster Laboratory and analyzed for BTEX, TPH and pH.
- Soil and water will be containerized and sampled for characterization. It is assumed that the water and soil analytical results will be below Tier 1 limits and will be land applied. If analytical results indicate that disposal of the soil and/or water will be required additional costs will need to be added to this proposal.
- Site visit to identify pilot study work areas AECOM met with JWS at the Westlake property on February 17, 2011, to identify specific areas to perform the pilot study. During this site visit, based on the identified locations of the pilot study areas, a decontamination area was identified and decontamination procedures were discussed with JWS.

- Additional scope for the pilot study AECOM's pilot study work scope included in the January 26, 2010 proposal was based on performing the study on two areas on the Westlake property. Based on that scope, AECOM had estimated that the soil screening pilot study would require approximately one day for mobilization and set up, five days to perform the study in the two areas, one day for equipment decontamination, and two days for demobilization and site cleanup. Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this document.
- Evaluation of the PCB field test kit As discussed previously, AECOM proposes to evaluate the Ensys PCB Soil Test Kit as a field screening tool for PCBs during the pilot study. The Ensys PCB Soil Test Kit is a qualitative or semi quantitative enzyme immunoassay (EIA) for analysis of PCBs at user specified detection levels in soil. If deemed feasible, this test kit will be used during remedy implementation to guide the excavation extents and during confirmation sampling to reduce analytical laboratory costs.

Using appropriate hand tools, AECOM will collect soil samples from PCB impacted and unimpacted areas. The collected samples will be split into two aliquots. One aliquot will be screened for PCBs using the soil test kit and the second aliquot will be submitted to a laboratory for PCB analysis. The soil test kit will be calibrated to 1 part per million (ppm) of PCBs for screening. The PCBs will be analyzed in the laboratory using EPA Method 8082 on a normal turnaround time (up to 10 business days).

For the purposes of this proposal, it is estimated that a total of 10 samples will be collected and screened/analyzed under this task. This task will be performed during the pilot study and no separate mobilization/demobilization cost is included for this task.

Preparation of Air Emissions Permit By Rule and Air Monitoring Plan - AECOM has determined that the Texas Commission on Environmental Quality (TCEQ) Permit By Rule (PBR) for 'Remediation' is applicable for the proposed pilot study field activities at the Site. The Remediation PBR is contained in Title 30 Texas Administrative Code (TAC) Chapter 106 Section 106.533 and was created to address emission-generating activities associated with remediation of soil and groundwater at sites in Texas. Facilities under Remediation PBR are subject to notification, monitoring, record keeping, and reporting requirements specified in section 106.533. If the Remediation PBR does not apply, then the general PBR covered under sections 106.261 or 106.262 are applicable to any soil screening operations or other facilities that are not addressed by a source specific PBR.

AECOM will prepare the preferred PBR application in consultation with Anadarko and provide a Site description and proposed operations for submittal to the TCEQ prior to initiating the field activities. A draft application will be provided to Anadarko for review and comments. Field activities will be initiated only after the PBR notification has been submitted to the TCEQ and, if applicable, approval has been received from the TCEQ for the PBR application.

In addition, AECOM will also prepare and implement an Air Monitoring Plan during pilot study field activities to monitor fugitive emissions and particulate matter. The plan will detail the number and type of equipment used during monitoring and the general scope of the air monitoring activities.

#### 2.2.2 New Field Taskings

Assess surface soils of that portion of the 69 Ranch which lies adjacent to and immediately south of the former plant site for potential constituents of concern. Assess specific locations on the former plant site for potential constituents of concern.

#### 2.2.3 Remediation of PCB Contaminated Soils

AECOM will perform coordination and construction oversight for the remediation/excavation of soils impacted with PCB's. The impacted soils will be remediated/excavated and either placed in a soil management area or transported of the site. During remediation/excavation, construction operators subcontracted to Anadarko will perform remediation/excavation of PCB impacted soils per AECOM's final remedial design and per AECOM's onsite guidance. Activities at the site will include site preparation work activities (storm water controls, clearing and grubbing, concrete slab and building demolition, temporary facility installation, haul road maintenance, and

gate/fence installation), remediation/excavation of impacted soils, construction of a soil management unit, construction of a repository, placement of soils in the soil management unit or repository, and site restoration.

#### 2.2.4 Concrete Work

Removal of a thin veneer (0.5 inch) of concrete on a former pump house concrete slab. The reason it is being removed is because it has PCBs up to 96 ppm at the surface.

We plan to have the work done in such a way that all dust and chips are vacuumed into drums – only minimal dust should escape.

#### 2.2.5 Removal of Dried Sludge

Removal of dried sludge and soil from the former compressor slab. I suspect that removal will be conducted using hand tools – flat blade shovels.

The dried sludge ranges from not present to up to about 4 inches.

There are six sumps each measuring about 20 feet by 6 feet.

Figure 2-1: Site Map

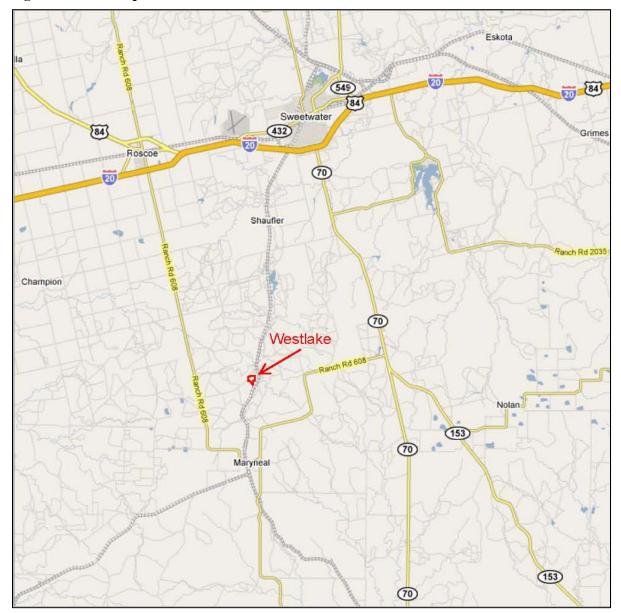
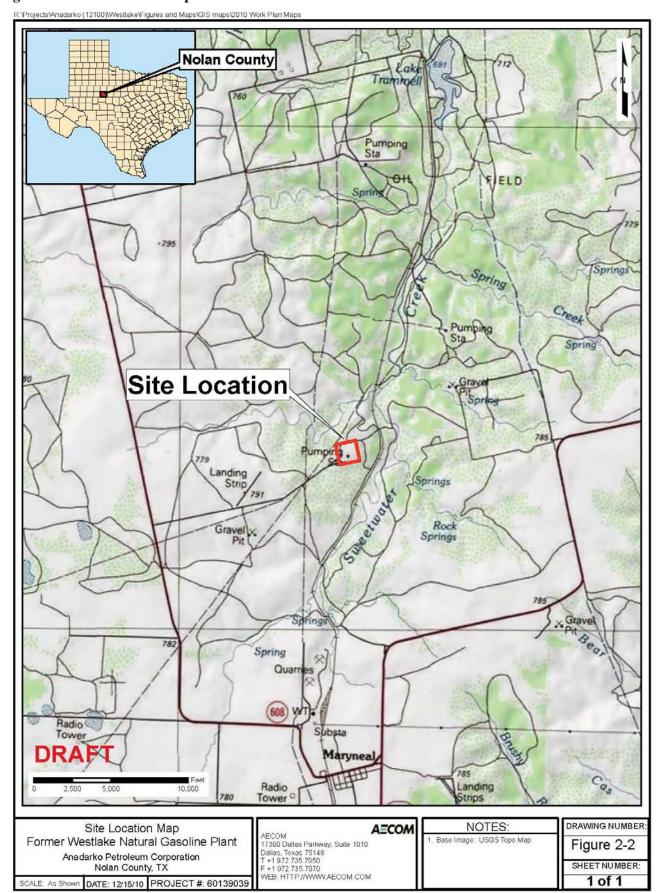


Figure 2-2: Site Location Map



#### 2.2.6 Additional Work Operations

The following additional tasks will also be performed as necessary in support of planned site activities:

<u>Mobilization/Demobilization</u>: Mobilization and demobilization represent limited pre and post-task activities. These activities include driving to and from the site; initial site preparations and post-work activities, such as removing files and office equipment and general housekeeping.

<u>Equipment Decontamination</u>: AECOM and subcontractor personnel will perform decontamination of equipment used to perform work within controlled work areas.

<u>Investigative-Derived Waste (IDW) Management</u>: IDW will be collected and categorized as non-hazardous or hazardous. Potentially hazardous IDW (purge water, and decontamination fluids, and soil cuttings [if any]) will be tested and disposed of within 90 calendar days of completing the field activities. Potentially hazardous IDW waste will be staged onsite, then delivered to an IDW storage facility for processing. Non-hazardous IDW (normal trash) will be disposed of in a timely fashion during fieldwork.

## 2.2.7 Assumptions

- All work can except removal of asbestos containing material be performed using Level D Personal Protective Equipment;
- Site management will assist in locating subsurface utilities, vessels, and structures located on the property and outside the scope of the utility locator service;
- No confined spaces will be entered on this project; and
- Benzene concentrations will not exceed 5 milligrams per kilogram in any soil or water encountered.

## 3.0 PROJECT HEALTH AND SAFETY ORGANIZATION

#### 3.1 PROJECT MANAGER – KURT WEBBER

The Project Manager (PM) has overall management authority and responsibility for all site operations, including safety. The PM will provide the site supervisor with work plans, staff, and budgetary resources, which are appropriate to meet the safety needs of the project operations.

#### 3.2 SAFETY PROFESSIONAL – DAN SCHILLINGS

The Safety Professional is the member of the AECOM Safety, Health and Environmental Department assigned to oversee health and safety requirements for the project and provide any needed technical support. The Safety Professional will be the first point-of-contact for all of the project's health and safety matters. Duties include the following:

- Approving this HASP and any required changes.
- Approving the designated Site Safety Officer (SSO).
- Reviewing all personal exposure monitoring results.
- Investigating any reported unsafe acts or conditions.

#### 3.3 SITE SUPERVISOR – KURT WEBBER

The site supervisor has the overall responsibility and authority to direct work operations at the job site according to the provided work plans. The PM may act as the site supervisor while on site.

#### 3.3.1 Responsibilities

The site supervisor is responsible to:

- Discuss deviations from the work plan with the SSO and PM.
- Discuss safety issues with the PM, SSO, and field personnel.
- Assist the SSO with the development and implementation of corrective actions for site safety deficiencies.
- Assist the SSO with the implementation of this HASP and ensuring compliance.
- Assist the SSO with inspections of the site for compliance with this HASP and applicable SOPs.

#### 3.3.2 Authority

The site supervisor has authority to:

- Verify that all operations are in compliance with the requirements of this HASP, and halt any activity that poses a potential hazard to personnel, property, or the environment.
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the SSO, the Safety Professional, and the PM.

#### 3.3.3 Qualifications

In addition to being Hazardous Waste Operations and Emergency Response (HAZWOPER)-qualified (see Section 4.1), the Site Supervisor is required to have completed the 8-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

#### 3.4 SITE SAFETY OFFICER –KURT WEBBER

## 3.4.1 Responsibilities

The SSO is responsible to:

• Update the site-specific HASP to reflect changes in site conditions or the scope of work. HASP updates must be reviewed and approved by the Safety Professional.

- Be aware of changes in AECOM Safety Policy.
- Monitor the lost time incidence rate for this project and work toward improving it.
- Inspect the site for compliance with this HASP and the SOPs using the appropriate audit inspection checklist provided by an AECOM Safety Professional.
- Work with the site supervisor and PM to develop and implement corrective action plans to correct deficiencies discovered during site inspections. Deficiencies will be discussed with project management to determine appropriate corrective action(s).
- Contact the Safety Professional for technical advice regarding safety issues.
- Provide a means for employees to communicate safety issues to management in a discreet manner (i.e., suggestion box, etc.).
- Determine emergency evacuation routes, establishing and posting local emergency telephone numbers, and arranging emergency transportation.
- Ensure that all site personnel and visitors have received the proper training and medical clearance prior to entering the site.
- Establish any necessary controlled work areas (as designated in this HASP or other safety documentation).
- Present tailgate safety meetings and maintain attendance logs and records.
- Discuss potential health and safety hazards with the Site Supervisor, the Safety Professional, and the PM.
- Select an alternate SSO by name and inform him/her of their duties, in the event that the SSO must leave or is absent from the site.

## 3.4.2 Authority

The SSO has authority to:

- Verify that all operations are in compliance with the requirements of this HASP.
- Issue a "Stop Work Order" under the conditions set forth in Section 4.7 of this HASP.
- Temporarily suspend individuals from field activities for infractions against the HASP pending consideration by the Safety Professional and the PM.

#### 3.4.3 Qualifications

In addition to being HAZWOPER-qualified (see Section 4.1), the SSO is required to have completed the 8-hour HAZWOPER Supervisor Training Course in accordance with 29 CFR 1910.120 (e)(4).

## 3.5 EMPLOYEES

## 3.5.1 Employee Responsibilities

Responsibilities of employees associated with this project include, but are not limited to:

- Understanding and abiding by the policies and procedures specified in the HASP and other applicable safety policies, and clarifying those areas where understanding is incomplete.
- Providing feedback to health and safety management relating to omissions and modifications in the HASP or other safety policies.
- Notifying the SSO, in writing, of unsafe conditions and acts.

#### 3.5.2 Employee Authority

The health and safety authority of each employee assigned to the site includes the following:

 The right to refuse to work and/or stop work authority when the employee feels that the work is unsafe (including subcontractors or team contractors), or where specified safety precautions are not adequate or fully understood.

- The right to refuse to work on any site or operation where the safety procedures specified in this HASP or other safety policies are not being followed.
- The right to contact the SSO or the Safety Professional at any time to discuss potential concerns.

#### 3.6 SUBCONTRACTORS

The requirements for subcontractor selection and subcontractor safety responsibilities are outlined in S3NA-213-PR Subcontractors. Each AECOM subcontractor is responsible for assigning specific work tasks to their employees. Each subcontractor's management will provide qualified employees and allocate sufficient time, materials, and equipment to safely complete assigned tasks. In particular, each subcontractor is responsible for equipping its personnel with any required personnel protective equipment (PPE).

AECOM considers each subcontractor to be an expert in all aspects of the work operations for which they are tasked to provide, and each subcontractor is responsible for compliance with the regulatory requirements that pertain to those services. Each subcontractor is expected to perform its operations in accordance with its own unique safety policies and procedures, in order to ensure that hazards associated with the performance of the work activities are properly controlled. Copies of any required safety documentation for a subcontractor's work activities will be provided to AECOM for review prior to the start of onsite activities, if required.

Hazards not listed in this HASP but known to any subcontractor, or known to be associated with a subcontractor's services, must be identified and addressed to the AECOM PM or the Site Supervisor prior to beginning work operations. The Site Supervisor or authorized representative has the authority to halt any subcontractor operations, and to remove any subcontractor or subcontractor employee from the site for failure to comply with established health and safety procedures or for operating in an unsafe manner.

#### 3.7 VISITORS

Authorized visitors (e.g., client representatives, regulators, AECOM management staff, etc.) requiring entry to any work location on the site will be briefed by the PM on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies. In addition, this HASP specifies the minimum acceptable qualifications, training and personal protective equipment which are required for entry to any controlled work area; visitors must comply with these requirements at all times.

Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

#### 4.0 SAFETY PROGRAMS

## 4.1 HAZWOPER QUALIFICATIONS

Personnel performing work at the job site must be qualified as HAZWOPER workers (unless otherwise noted in specific THAs or by the SSO), and must meet the medical monitoring and training requirements specified in the following safety procedures:

- S3NA-003-PR SH&E Training
- S3NA-210-PR Project Safety Meetings
- S3NA-507-PR Hazard Materials Communication / WHMIS
- S3NA-509-PR Hazardous Waste Operations and Emergency Response

Personnel must have successfully completed training meeting the provisions established in 29 CFR 1910.120 (e)(2) and (e)(3) (40-hour initial training). As appropriate, personnel must also have completed annual refresher training in accordance with 29 CFR 1910.120 (e)(8); each person's most recent training course must have been completed within the previous 365 days. Personnel must also have completed a physical exam in accordance with the requirements of 29 CFR 1910.120 (f), where the medical evaluation includes a judgment of the employee's ability to use respiratory protective equipment and to participate in hazardous waste site activities. These requirements are further discussed in S3NA-509-PR Hazardous Waste Operations and Emergency Response.

If site monitoring procedures indicate that a possible exposure has occurred above the OSHA permissible exposure limit (PEL), employees may be required to receive supplemental medical testing to document symptoms specific to the particular materials present.

#### 4.2 SITE-SPECIFIC SAFETY TRAINING

All personnel performing field activities at the site will be trained in accordance with S3NA-003-PR SH&E Training. For this project, training will include the requirements specified in the following:

- 1. S3NA-210-PR Project Safety Meetings
- 2. S3NA-405-PR Drilling and Boring
- 3. S3NA-507-PR Hazard Materials Communication / WHMIS
- 4. S3NA-509-PR Hazardous Waste Operations and Emergency Response
- 5. S3NA-519-PR Respiratory Protection Program

In addition to the general health and safety training programs, personnel will be:

- Instructed on the contents of applicable portions of this HASP and any supplemental health and safety information developed for the tasks to be performed.
- Workers will be instructed on the proper ultraviolet radiation protection measures per S3NA-517-PR Radiation, Non-Ionizing
- Informed about the potential routes of exposure, protective clothing, precautionary measures, and symptoms or signs of chemical exposure and heat stress.
- Made aware of task-specific physical hazards and other hazards that may be encountered during site work. This includes any client-specific required training for health and safety.
- Made aware of fire prevention measures, fire extinguishing methods, and evacuation procedures.

The site-specific training will be performed prior to the worker performing the subject task or handling the impacted materials and on an as-needed basis thereafter. Training will be conducted by the SSO (or his/her designee) and will be documented on the form attached to S3NA-210-PR Project Safety Meetings.

#### **4.2.1** Competent-Person Training Requirements

The planned scope of work will not include the need to have OSHA-designated competent personnel on site.

#### 4.3 HAZARD COMMUNICATION

Section 5.2 provides information concerning the materials that may be encountered as environmental contaminants during the work activities. In addition, any organization wishing to bring any hazardous material onto any AECOM-controlled work site must first provide a copy of the item's Safety Data Sheet (SDS) to the SSO for approval and filing (the SSO will maintain copies of all SDSs on site). SDSs may not be available for locally-obtained products, in which case some alternate form of product hazard documentation will be acceptable. In accordance with the requirements of S3NA 507 PR Hazardous Materials Communication - WHMIS, all personnel shall be briefed on the hazards of any chemical product they use, and shall be aware of and have access to all SDSs.

## 4.3.1 Container Labeling

AECOM personnel will ensure that all drums and containers are labeled according to contents. These drums and containers will include those from manufacturers and those produced on-site by operations. All incoming and outgoing labels shall be checked for identity, hazard warning, and name and address of responsible party. Labeling on any containers not intended for single-day, individual use shall contain additional information indicating potential health and safety hazards (flammability, reactivity, etc.).

#### 4.3.2 Safety Data Sheets

Attachment B provides copies of SDSs for those items planned to be brought on-site at the time this HASP is prepared. This information will be updated as required during site operations.

#### 4.3.3 Employee Information and Training

Training employees on chemical hazards is accomplished through an ongoing corporate training program. Additionally, chemical hazards are communicated to employees through daily safety meetings held at AECOM field projects and by an initial site orientation program.

At a minimum, AECOM and subcontractor employees will be instructed about the following:

- Chemicals and their hazards in the work area
- How to prevent exposure to these hazardous chemicals
- What the company has done to prevent workers' exposure to these chemicals
- Procedures to follow if they are exposed to these chemicals
- How to read and interpret labels and SDSs for hazardous substances found on AECOM sites
- Emergency spill procedures
- Proper storage and labeling

Before a new chemical is introduced on-site, each AECOM and related subcontractor employee will be given information in the same manner as during the initial site orientation program. The SSHO will be responsible for seeing that the SDS for the new chemical is available for review by on-site personnel. The information pertinent to the chemical hazards will be communicated to project personnel.

Morning safety meetings will be held and the hazardous materials used on-site will be discussed. Attendance is mandatory for all on-site employees.

#### 4.4 CONFINED SPACE ENTRY

The SSO/site supervisor shall identify all potential confined spaces in accordance with S3NA-301-PR Confined Spaces. In addition, the SSO/site supervisor will inform all employees of the location of confined spaces. Confined space entry procedures and training requirements are listed in S3NA-301-PR.

No confined space entries are anticipated for this project.

## 4.5 HAZARDOUS, SOLID, OR MUNICIPAL WASTE

If hazardous, solid, and/or municipal wastes are generated during any phase of the project, the waste shall be accumulated, labeled, and disposed of in accordance with applicable Federal, State, and/or local regulations.

#### 4.6 GENERAL SAFETY RULES

All site personnel shall adhere to S3NA-001-PR Safe Work Standards and Rules, during site operations. In addition, the housekeeping, sanitation, and personal hygiene requirements in S3NA-307-PR Housekeeping, Worksite will be observed. Specific excerpts from S3NA-307-PR are listed below.

## 4.6.1 Housekeeping

During site activities, work areas will be continuously policed for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials.

## 4.6.2 Smoking, Eating, or Drinking

Smoking, eating and drinking will not be permitted inside any controlled work area at any time. Field workers will first wash hands and face immediately after leaving controlled work areas (and always prior to eating or drinking). Consumption of alcoholic beverages is prohibited at any AECOM site.

#### 4.6.3 Personal Hygiene

The following personal hygiene requirements will be observed:

Water Supply: A water supply meeting the following requirements will be utilized:

Potable Water - An adequate supply of potable water will be available for field personnel consumption. Potable water can be provided in the form of water bottles, canteens, water coolers, or drinking fountains. Where drinking fountains are not available, individual-use cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified in order to distinguish them from non-potable water sources.

*Non-Potable Water* - Non-potable water will not be used for drinking purposes. Non-potable water may be not used for hand washing or other personnel hygiene activities but may be used for other types of cleaning activities. All containers of non-potable water will be marked with a label stating:

## Non-Potable Water Not Intended for Drinking Water Consumption

<u>Toilet Facilities</u>: A minimum of one toilet will be provided for every 20 personnel on site, with separate toilets maintained for each sex except where there are less than 5 total personnel on site. For mobile crews where work activities and locations permit transportation to nearby toilet facilities on-site facilities are not required.

<u>Washing Facilities</u>: Employees will be provided washing facilities (e.g., buckets with water and Alconox) at each work location. The use of water and hand soap (or similar substance) will be required by all employees following exit from the Exclusion Zone, prior to breaks, and at the end of daily work activities.

#### 4.6.4 Buddy System

All field personnel will use the buddy system when working within any controlled work area. Personnel belonging to another organization on site can serve as "buddies" for AECOM personnel. Under no circumstances will any employee be present alone in a controlled work area. For areas not in controlled work areas, the procedures outlined in S3NA-314-PR Working Alone & Remote Travel will be followed at all times.

#### 4.6.5 Weather

Heat and cold stress may vary based upon work activities, PPE/clothing selection, geographical locations, and weather conditions. To reduce the potential of developing heat/cold stress, be aware of the signs and symptoms

of heat/cold stress and watch fellow employees for signs of heat/cold stress. For additional requirements, refer to S3NA-505-PR Cold Stress Prevention, and S3NA-511-PR Heat Stress Prevention,

Severe weather can occur with little warning. The employee must be aware of the potentials for lightning, flash flooding and high wind events.

## Be Prepared, Know What is Coming your Way

- Listen to the radio for severe weather alerts.
- Check the Storm Prediction Center's web page for alerts and warnings.

## http://www.spc.noaa.gov/products/wwa/

- Pay attention to the weather in your area, up wind of your location, and in the watershed upstream from your location.
- When in the field, be aware of the route you must take to get to shelter.

When working in low areas be aware of the potential for flash flooding and the route to higher ground.

#### 4.6.5.1 Heat Stress

#### Types of Heat Stress

Heat related problems include heat rash, fainting, heat cramps, heat exhaustion and heat stroke. Heat rash can occur when sweat isn't allowed to evaporate; leaving the skin wet most of the time and making it subject to irritation. Fainting may occur when blood pools to lower parts of the body and as a result, does not return to the heart to be pumped to the brain. Heat related fainting often occurs during activities that require standing erect and immobile in the heat for long periods of time. Heat cramps are painful spasms of the muscles due to excessive salt loss associated with profuse sweating.

**Heat exhaustion** typically results from the loss of large amounts of fluid and excessive loss of salt from profuse sweating. The skin will be clammy and moist and the affected individual may exhibit giddiness, nausea and headache.

**Heat stroke** occurs when the body's temperature regulatory system has failed. The skin is hot, dry, red and spotted. The affected person may be mentally confused and delirious. Convulsions could occur. EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH. A person exhibiting signs of heat stroke should be removed from the work area to a shaded area. The person should be soaked with water to promote evaporation. Fan the person's body to increase cooling.

Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks.

Early Symptoms of Heat-Related Health Problems:

Decline in task performance Excessive fatigue Incoordination Reduced vigilance Decline in alertness Muscle cramps

Unsteady walk Dizziness

Susceptibility to Heat Stress Increases due to:

Lack of physical fitness Obesity Lack of acclimatization

Drug or alcohol use Increased age Sunburn

Dehydration Infection

People unaccustomed to heat are particularly susceptible to heat fatigue. First timers in PPE need to gradually adjust to the heat.

## The Effect of Personal Protective Equipment

Sweating normally cools the body as moisture is removed from the skin by evaporation. However, the wearing of certain personal protective equipment (PPE), particularly chemical protective coveralls (e.g., Tyvek), reduces the body's ability to evaporate sweat and thereby regulate heat buildup. The body's efforts to maintain an acceptable temperature can therefore become significantly impaired by the wearing of PPE.

#### Measures to Avoid Heat Stress:

The following guidelines should be adhered to when working in hot environments:

- Establish work-rest cycles (short and frequent are more beneficial than long and seldom).
- Identify a shaded, cool rest area.
- Rotate personnel, alternative job functions.
- Water intake should exceed sweat produced. Most workers exposed to hot conditions drink an insufficient amount of fluids than needed because of a lack of thirst. DO NOT DEPEND ON THIRST TO SIGNAL WHEN AND HOW MUCH TO DRINK. Consume enough liquid to force urination every two hours. In humid climates ice water or ice should be consumed to help maintain normal body temperature since evaporation does not provide an efficient mechanism for heat removal.
- Eat light meals before and during work shifts. Avoid highly salted foods.
- Drink sports drinks such as Gatorade® diluted 1:1 with water.
- Save most strenuous tasks for non-peak heat hours such as the early morning or at night.
- Avoid alcohol during prolonged periods of heat. Alcohol will cause additional dehydration.

The implementation and enforcement of the above mentioned measures will be the joint responsibility of the Project Manager and health and the Site Safety Officer. Potable water and fruit juices should be made available each day for the field team.

**Table 4-1: Temperature Adjustment Factors** 

| Time of Day   |      |  |  |  |  |
|---|------|--|--|--|--|
| Before daily temperature peak <sup>1</sup>                    | +2°F |  |  |  |  |
| 10 am – 2 pm (peak sunshine)                                  | +2°F |  |  |  |  |
| Sunshine  |      |  |  |  |  |
| No clouds   | +1°F |  |  |  |  |
| Partly Cloudy (3/8 – 5/8 cloud cover)                         | -3°F |  |  |  |  |
| Mostly Cloudy (5/8 – 7/8 cloud cover)                         | -5°F |  |  |  |  |
| Cloudy (>7/8 cloud cover)                                     | -7°F |  |  |  |  |
| Indoor or nighttime work                                      | -7°F |  |  |  |  |
| Wind (ignore if indoors or wearing CPC)                       |      |  |  |  |  |
| Gusts greater than 5 miles per hour at least once per minute  | -1°F |  |  |  |  |
| Gusts greater than 10 miles per hour at least once per minute | -2°F |  |  |  |  |
| Sustained greater than 5 miles per hour                       | -3°F |  |  |  |  |
| Sustained greater than 10 miles per hour                      | -5°F |  |  |  |  |
| Humidity (ignore if wearing C                                 | CPC) |  |  |  |  |
| Relative Humidity greater than 90%                            | +5°F |  |  |  |  |
| Relative humidity greater than 80%                            | +2°F |  |  |  |  |
| Relative Humidity less than 50%                               | -4°F |  |  |  |  |
| Chemical Protective Clothing (CPC)                            |      |  |  |  |  |

<sup>1</sup> This adjustment accounts for temperature rise during the day. If the temperature has already reached its daytime peak it can be ignored.

AECOM Page 4-5 November 2014

| Modified Level D (coveralls, no respirator)         | +5°F                                    |  |
|---|---|--|
| Level C (coveralls w/o hood, full-face respirator)  | +8°F                                    |  |
| Level C (coveralls with hood, full-face respirator) | +10°F                                   |  |
| Level B with airline system                         | +9°F                                    |  |
| Level B with SCBA                                   | +9°F and right one column <sup>2</sup>  |  |
| Level A   | +14°F and right one column <sup>2</sup> |  |
| Other   | Specified in the HASP                   |  |
| Miscellaneous                                       |   |  |
| Unacclimated work force                             | +5°F                                    |  |
| Partially acclimated work force                     | +2°F                                    |  |
| Working in shade                                    | -3°F                                    |  |
| Breaks taken in air conditioned space               | -3°F                                    |  |

**Table 4-2: Work Rest Schedule** 

|  | Adjusted Temperature (°F) |               |            |                    |  |  |
|--|---------------------------|---------------|------------|--------------------|--|--|
| Work-Rest Regimen                        | Light Work                | Moderate Work | Heavy Work | Very Heavy<br>Work |  |  |
| No specified requirements                | < 80                      | < 75          | < 70       | < 65               |  |  |
| 15 minute break every 90 minutes of work | 80 – 90                   | 75 - 85       | 70 - 80    | 65 – 75            |  |  |
| 15 minute break every 60 minutes of work | >90 – 100                 | > 85 - 95     | >80 - 85   | >75 - 80           |  |  |
| 15 minute break every 45 minutes of work | >100 – 110                | >95 - 100     | >85 - 90   | >80 - 85           |  |  |
| 15 minute break every 30 minutes of work | >110 - 115                | >100 - 105    | >90 - 95   | >85 - 90           |  |  |
| 15 minute break every 15 minutes of work | >115 - 120                | >105 - 110    | >95 -100   | >90 - 95           |  |  |
| Stop Work                                | >120                      | >110          | >100       | >95                |  |  |

Note: Time spent performing decontamination or donning/doffing CPC should not be included in calculating work or break time lengths.

## **Heat Stress Monitoring Techniques**

Site personnel should regularly monitor their heart rate as an indicator of heat strain by the following method:

Radial pulse rates should be checked by using fore-and middle fingers and applying light pressure top the pulse in the wrist for one minute at the beginning of each rest cycle. If the pulse rate exceeds 110 beats/minute, the next work cycle will be shortened by one-third and the rest period will be kept the same. If, after the next rest period, the pulse rate still exceeds 110 beats/minute, the work cycle will be shortened again by one-third.

#### 4.6.5.2 Responding to Heat-Related Illness

The guidance below will be used in identifying and treating heat-related illness.

AECOM Page 4-6 November 2014

<sup>&</sup>lt;sup>2</sup> Locate the proper column based on work rate, then move one column to the right (next higher work rate) before locating the corresponding adjusted temperature.

Table 4-3: Identification and Treatment of Heat-Related Illness

| Type of Heat-<br>Related Illness | Description  | First Aid  |
|----------------------------------|--|--|
| Mild Heat Strain                 | The mildest form of heat-related illness. Victims exhibit irritability, lethargy, and significant sweating. The victim may complain of headache or nausea. This is the initial stage of overheating, and prompt action at this point may prevent more severe heat-related illness from occurring.  | <ul> <li>Provide the victim with a work break during which he/she may relax, remove any excess protective clothing, and drink cool fluids.</li> <li>If an air-conditioned spot is available, this is an ideal break location.</li> <li>Once the victim shows improvement, he/she may resume working; however, the work pace should be moderated to prevent recurrence of the symptoms.</li> </ul>  |
| Heat Exhaustion                  | Usually begins with muscular weakness and cramping, dizziness, staggering gait, and nausea. The victim will have pale, clammy moist skin and may perspire profusely. The pulse is weak and fast and the victim may faint unless they lie down. The bowels may move involuntarily.  | <ul> <li>Immediately remove the victim from the work area to a shady or cool area with good air circulation (avoid drafts or sudden chilling).</li> <li>Remove all protective outerwear.</li> <li>Call a physician.</li> <li>Treat the victim for shock. (Make the victim lie down, raise his or her feet 6–12 inches, and keep him/her cool by loosening all clothing).</li> <li>If the victim is conscious, it may be helpful to give him/her sips of water.</li> <li>Transport victim to a medical facility ASAP.</li> </ul>  |
| Heat Stroke                      | The most serious of heat illness, heat stroke represents the collapse of the body's cooling mechanisms. As a result, body temperature may rise to 104 degrees Fahrenheit or higher. As the victim progresses toward heat stroke, symptoms such as headache, dizziness, nausea can be noted, and the skin is observed to be dry, red, and hot. Sudden collapse and loss of consciousness follows quickly and death is imminent if exposure continues. Heat stroke can occur suddenly. | <ul> <li>Immediately evacuate the victim to a cool/shady area.</li> <li>Remove all protective outerwear and as much personal clothing as decency permits.</li> <li>Lay the victim on his/her back w/the feet slightly elevated.</li> <li>Apply cold wet towels or ice bags to the head, armpits, and thighs.</li> <li>Sponge off the bare skin with cool water.</li> <li>The main objective is to cool without chilling the victim.</li> <li>Give no stimulants or hot drinks.</li> <li>Since heat stroke is a severe medical condition requiring professional medical attention, emergency medical help should be summoned immediately to provide onsite treatment of the victim and proper transport to a medical facility.</li> </ul> |

## 4.6.5.3 Cold Stress

#### Type of Cold Stress

Cold injury is classified as either localized, as in frostbite, frostnip or chilblain; or generalized, as in hypothermia. The main factors contributing to cold injury are exposure to humidity and high winds, contact with wetness and inadequate clothing.

The likelihood of developing frostbite occurs when the face or extremities are exposed to a cold wind in addition to cold temperatures. The freezing point of the skin is about 30° F. When fluids around the cells of the body tissue freeze, skin turns white. This freezing is due to exposure to extremely low temperatures. As wind velocity increases, heat loss is greater and frostbite will occur more rapidly.

## Symptoms of Cold Stress

The first symptom of frostbite is usually an uncomfortable sensation of coldness, followed by numbness. There might be a tingling, stinging or aching feeling in the affected area. The most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes.

Symptoms of hypothermia, a condition of abnormally low body temperature, include uncontrollable shivering and sensations of cold. The heartbeat slows and can become irregular, the pulse weakens and the blood pressure changes. Pain in the extremities and severe shivering can be the first warning of dangerous exposure to cold.

Maximum severe shivering develops when the body temperature has fallen to 95° F. Productive physical and mental work is limited when severe shivering occurs. Shivering is a serious sign of danger. Immediately remove any person who is shivering from the cold.

#### Methods to Prevent Cold Stress

When the ambient temperature, or a wind chill equivalent, falls to below 40° F (American Conference of Governmental Industrial Hygienists recommendation), site personnel who must remain outdoors should wear insulated coveralls, insulated boot liners, hard hat helmet liners and insulated hand protection. Wool mittens are more efficient insulators than gloves. Keeping the head covered is very important, since 40% of body heat can be lost when the head is exposed. If it is not necessary to wear a hard hat, a wool knit cap provides the best head protection. A facemask may also be worn.

Persons should dress in several layers rather than one single heavy outer garment. The outer piece of clothing should ideally be wind and waterproof. Clothing made of thin cotton fabric or synthetic fabrics such as polypropylene is ideal since it helps to evaporate sweat. Polypropylene is best at wicking away moisture while still retaining its insulating properties. Loosely fitting clothing also aids in sweat evaporation. Denim is not a good protective fabric. It is loosely woven which allows moisture to penetrate. Socks with a high wool content are best. If two pairs of socks are worn, the inner sock should be smaller and made of cotton, polypropylene or similar types of synthetic material that wick away moisture. If clothing becomes wet, it should be taken off immediately and a dry set of clothing put on.

If wind conditions become severe, it might become necessary to shield the work area temporarily. The SSO and the PM will determine if this type of action is necessary. Heated break trailers or a designated area that is heated should be available if work is performed continuously in the cold at temperatures, or equivalent wind chill temperatures, of  $20^{\circ}$  F.

Dehydration occurs in the cold environment and can increase the susceptibility of the worker to cold injury due to significant change in blood flow to the extremities. Drink plenty of fluids, but limit the intake of caffeine.

| Sunny S     | ky Air     | No No    | ticeable    | Wind 8   | 8 km/h (5   | Wind     | 16 km/h    | Wind     | 24 km/h     | Wind    | 32 km/h     |
|-------------|------------|----------|-------------|----------|-------------|----------|------------|----------|-------------|---------|-------------|
| Temperature |            | Wind     |             | mph)     |             | (10 mph) |            | (15 mph) |             | (20     | mph)        |
| °C          | °F         | Max.     | Number of   |          | Number of   |          | Number of  |          | Number of   |         | Number of   |
| below       | below<br>* | work     | breaks /4   | work     | breaks /4   | work     | breaks /4  | work     | breaks /4   | work    | breaks /4   |
| zero        | zero       | period   | hours       | period   | hours       | period   | hours      | period   | hours       | period  | hours s     |
| 26 to 28    | 15 to 19   | normal   | 1           | normal   | 1           | 75       | 2          | 55       | 3           | 40      | 4           |
|             |            | breaks   |             | breaks   |             | minutes  |            | minutes  |             | minutes |             |
| 29 to 31    | 20 to 24   | normal   | 1           | 75       | 2           | 55       | 3          | 40       | 4           | 30      | 5           |
|             |            | breaks   |             | minutes  |             | minutes  |            | minutes  |             | minutes |             |
| 32 to 34    | 25 to 29   | 75       | 2           | 55       | 3           | 40       | 4          | 30       | 5           |         |             |
|             |            | minutes  |             | minutes  |             | minutes  |            | minutes  |             | Non-eme | rgency work |
| 35 to 37    | 30 to 34   | 55       | 3           | 40       | 4           | 30       | 5          |          |             | shou    | ıld stop    |
|             |            | minutes  |             | minutes  |             | minutes  |            | Non-emer | rgency work |         |             |
| 38 to 39    | 35 to 39   | 40       | 4           | 30       | 5           |          |            | shou     | ıld stop    |         |             |
|             |            | minutes  |             | minutes  |             | Non-emer | gency work |          |             |         |             |
| 40 to 42    | 40 to 44   | 30       | 5           |          |             | shou     | ld stop    |          |             |         |             |
|             |            | minutes  |             | Non-emer | rgency work |          |            |          |             |         |             |
| 43 and      | 45 and     |          |             | shou     | ld stop     |          |            |          |             |         |             |
| below       | below      | Non-emer | rgency work |          |             |          |            |          |             |         |             |
|             |            | shou     | ld stop     |          |             |          |            |          |             |         |             |

## 4.6.5.4 Ultraviolet Radiation Protection

To protect against exposure to ultraviolet (UV) radiation, workers will observe the following requirements:

- 1. All workers will wear sunglass-type safety glasses at all times when working outdoors during daylight hours.
- 2. Workers will utilize a commercial sunblock with a minimum solar protection factor (SPF) of 15 or higher.
- 3. Wide-brim hard hats are recommended as they provide additional UV protection.

#### **4.6.6 Driving**

Drivers must be licensed to drive the class of vehicle they are operating and trained in defensive driving. Only AECOM personnel may drive AECOM vehicles or vehicles rented for AECOM business. Clients, subcontractors, or other work-related personnel may ride. Drivers and passengers must comply with all traffic laws and posted signs, and will not operate a vehicle if under the influence of impairing medication, alcohol, or any other substance. Drivers and passengers will have their seatbelts secured prior to putting the vehicle in gear.

#### 4.6.7 Journey Management Planning

Prior to each visit to the site, a Journey Management Plan (JMP) must be completed by the person(s) involved in the journey and approved by the AECOM Project Manager. The JMP should include items such as time and date of journey, journey participants, duration, route, emergency contacts, the weather forecast, and any additional information that may have an impact on the potential for a safe journey.

## 4.6.8 Vehicle Inspection

Vehicle inspections must be performed on a daily basis (at a minimum) for each vehicle (AECOM-owned, personal, or rental) to be used for travel to and from or within the site location. Each vehicle must contain the proper emergency equipment and supplies and be in proper working order to be used for travel. Any vehicle not passing the vehicle inspection will not be used until the deficient items are corrected. This document can be found in Attachment I.

## 4.6.9 Planning / Preparation

- Prior to departure, check traffic reports, weather conditions, road construction, and road closures. If necessary, develop an alternate route and new, approved JMP (Journey Management Plan).
- Prior to entering the vehicle, inspect the vehicle.
- Leave early to allow for contingencies.

#### 4.6.10 Distractions

You must NOT operate a vehicle while talking on your cell phone, regardless of "hands free" or not. If you receive a call, pull over to answer it. Do NOT allow other distractions to interfere with your safe operation of the vehicle.

#### 4.6.11 Secure Packing

Do not move your vehicle unless all equipment and supplies in the passenger compartment and trunk or bed are secured. Items and materials which may roll, slide, or move about in your vehicle and its storage areas while traveling are a major hazard. Secure the load!

#### **4.6.12** Emergency Procedures

In an emergency, always try to move out of the flow of traffic if possible; even if those in front of you have stopped, attempt to pull as far over to the side as possible. Stopping on an active highway can precipitate being hit from the rear. If you must stop on an active roadway, leave at least one car length in front of you, and watch the rear mirror, so you can ease up if someone behind can't stop. Keep your flashers on in this situation. If you are the only driver coming to a stop on an active roadway, leave the flashers on and when safe to do so, exit the car and get to a safe location.

If you must stop due to vehicle failure, etc. try to coast out of traffic and put on your flashers. If you remain in the vehicle, lock the doors. Use your cell phone to summon help.

#### 4.7 CLOTHING

Fitted long sleeve clothing made of cotton or equivalent material (non synthetic) in good condition which covers the legs, body, and arms are the minimum requirement on Anadarko's locations. For those tasks where individuals may come into contact with flammable substances, fire retardant clothing is mandatory.

In the areas where standard PPE is required, the wearing of jewelry (rings, earrings, necklaces, bracelets, etc.) is prohibited. The wearing of wrist watches is allowed.

#### 4.8 USE OF UTILITY KNIVES OR OTHER OPEN-BLADED CUTTING TOOLS

All utility knives with manually retracting blades (including "pocket knives" and other "collapsible, open-blade cutting tools") are no longer permitted on any AECOM jobsite, unless specifically authorized on a task-specific basis in this HASP and associated THA/JSA. The only acceptable type of utility knife will be those with automatically retracting blades. Other "cutters" must be equipped with a completely enclosed and guarded blade. Additional recommendations regarding the use of cutting tools can be found in S3NA-305-PR Hand and Power Tools.

## 4.9 EQUIPMENT SAFETY CARDS

Equipment safety cards have been produced by the SH&E Department for review prior to operating portable mechanized equipment (e.g., chainsaws, chop saws, power washers, etc.). Equipment safety cards should be used as a point of reference prior to using the specified piece of equipment. The cards will be used in conjunction with the manufacturers operating instructions. Personnel must be adequately trained in the tools usage prior to operation, thus using the card as a reminder or THA/JSA for additional safe operation. The cards are not a substitute for training, which at a minimum, must consist of having an observed skill set indicating good working knowledge and equipment operation time. The applicable Equipment Safety Cards are included in Attachment C of this HASP.

## 4.10 STOP WORK AUTHORITY

All employees have the right and duty to stop work when conditions are unsafe, and to assist in correcting these conditions as outlined in S3NA-002-PR Stop Work Authority for Unsafe Work. Whenever the SSO determines that workplace conditions present an uncontrolled risk of injury or illness to employees, immediate resolution with the appropriate supervisor shall be sought. Should the supervisor be unable or unwilling to correct the unsafe conditions, the SSO is authorized and required to stop work, which shall be immediately binding on all affected AECOM employees and subcontractors.

Upon issuing the stop work order, the SSO shall implement corrective actions so that operations may be safely resumed. Resumption of safe operations is the primary objective; however, operations shall not resume until the Safety Professional has concurred that workplace conditions meet acceptable safety standards.

## 4.11 CLIENT SPECIFIC SAFETY REQUIREMENTS

The client has specified that SafeLand USA training will be required for all individuals who performed field work on this project as of July 1, 2010.

Client-specific health and safety guidelines are included in Attachment E of this HASP. All site activities must be performed in accordance with client-specific requirements and procedures.

#### 4.12 ENVIRONMENTAL COMPLIANCE AND MANAGEMENT

This project and the individual taskings will comply with all federal, state, provincial, and local environmental requirements as well as S3NA-204-PR Environmental Compliance.

#### 4.12.1 Air Emissions

The air emissions produced during this project will not exceed any applicable federal, state, county, or municipal emission limits, nor will the planned emissions require a regulatory air permit.

#### 4.12.2 Hazardous Waste Management

Soil cuttings and monitoring well purge water will be containerized and stored on site in 55-gallon steel drums pending receipt of analytical results. Disposal options will be developed based on the laboratory results. It is currently anticipated that none of the investigation-derived waste (IDW) will exhibit hazardous characteristics.

#### **4.12.3** Stormwater Pollution Prevention

The proposed project does not anticipate the need for stormwater protection measures; however, the project location will be thoroughly evaluated for locations where an environmental spill or release could impact either open stormwater drainage or below grade stormwater systems. If these systems are identified at the project site, they will be properly protected. The area of land disturbance for this project is less than one acre; therefore, no State of Louisiana construction stormwater discharge permit is required.

#### 4.12.4 Wetlands Protection

After reviewing the U.S. Fish and Wildlife Service's National Wetlands Inventory Mapper, no wetlands were identified within one mile of the project site.

#### 4.12.5 Critical Habitat Protection

After reviewing the U.S. fish and Wildlife Service's Critical Habitat Mapper, no critical habitats were noted at within one mile of the project site or the general area.

## 5.0 HAZARD ASSESSMENT

#### 5.1 HAZARD ANALYSIS

Task hazard analysis (THA) or Job Safety Analysis (JSA) is a technique used to identify hazards and hazard controls associated with a specific job function. THAs/JSAs focus on the relationship between the workers, the task, the resources required to complete the task, and the work environment. These variables must be evaluated to identify the potential hazards associated with the task. Once identified, steps can be taken to eliminate, reduce, or control the hazards to an acceptable risk level. Guidelines for developing THAs/JSAs are located in S3NA-209-PR, Project Hazard Assessment and Planning.

Section 2.2 describes the work activities anticipated to be performed during this project. Individual THAs/JSAs for the tasks associated with this work can be found in Attachment A.

#### **5.1.1** Unanticipated Work Activities/Conditions

Operations at the site may require additional tasks not identified in Section 2.2 or addressed in Attachment A THAs/JSAs. Before performing any task not covered in this HASP a THA/JSA must be prepared, and approved by the Safety Professional.

#### 5.2 ENVIRONMENTAL CONTAMINANT EXPOSURE HAZARDS

The following is a discussion of the hazards presented to worker personnel during this project from on-site chemical and radiological hazards known or suspected to be present on site. Hazards associated with chemical products brought to the site during work operations are addressed separately, under the Hazard Communication process described in Section 4.3.

Exposure symptoms and applicable first aid information for each suspected site contaminant listed in Section 2 are located in the following subsections.

## **5.2.1** Polychlorinated Biphenyls (PCBs)

CAS 42% chlorine 53469-21-9; RTECS TQ1356000

## **CAS 54% chlorine 11097-69-1; RTECS TQ1360000**

Polychlorinated biphenyls (PCBs) are a series of technical mixtures, consisting of many isomers and compounds that vary from mobile oily liquids to white crystalline solids and hard non-crystalline resins. The variability is based upon the degree of chlorination (and location of chlorine atoms) on the diphenyl rings that act as the skeleton for PCBs. The name Aroclor® 1221, 1233, 1242, 1248, 1254, 1260 etc. correspond as to the percentage that the diphenyl rings have been instituted, i.e., 21%, 33%, 42%, etc. The most commonly encountered PCBs are chlorodiphenyl (42% chlorine) [Aroclor® 1242] and chloridiphenyl (54% chlorine) [Aroclor® 1254]. These compounds are light, straw-colored liquids with typical chlorinated aromatic odors; 42% chlorodiphenyl is a mobile liquid and 54% chlorodiphenyl is a viscous liquid. Chlorodiphenyl (42% chlorine) boils between 617° and 691° and freezes at -2°F. Chlorodiphenyl (54% chlorine) boils between 689° and 734°F and freezes at 50°F. The synonyms for PCBs are chlorodiphenyls, Aroclors, and Kanechlors. Names further defining PCBs, based upon chlorine substitution are Aroclor® 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1268, 2565, 4465, 5442, 5460 and Kanechlor 300, 400, 500. PCBs are incompatible with strong oxidizers.

PCBs are used alone and in combination with chlorinated naphthalenes. They are stable, thermoplastic, and nonflammable, and find chief use in insulation for electric cables and wires, in the production of electric condensers, as additives for extreme pressure lubricants, and as a coating in foundry use. PCBs are one member of a class of chlorinated aromatic organic compounds which are of increasing concern because of their apparent ubiquitous dispersal, persistence in the environment, and tendency to accumulate in food chains, with possible adverse effects on animals at the top of food webs, including man. The OSHA PEL and ACGIH TLV are 1 mg/m<sup>3</sup> for chlorodiphenyl 42% Cl and 0.5 mg/m<sup>3</sup> for 54% Cl. The NIOSH REL for both 42% and 54% are 0.001 mg/m<sup>3</sup>. The IDLH level is 5 mg/m<sup>3</sup>.

Routes of entry are via inhalation of fume or vapor and percutaneous absorption of liquid, ingestion, eye and skin contact. Harmful effects from short term exposure are as follows:

*Inhalation* - May produce irritation to nose, throat, and lungs. Levels above 10 mg/m<sup>3</sup> are reported to be unbearable. Inhalation may contribute significantly to all symptoms of long term exposure.

*Skin* - Absorption is moderate. Contributes significantly to all symptoms of long term exposure. Sensitized individuals may develop a rash after 2 days exposure by contact or inhalation.

Eyes - May produce irritation. Levels of 10 mg/m<sup>3</sup> are severely irritating.

*Ingestion* - Absorption in the digestive system contributes significantly to all symptoms of long term exposure. There are no reported deaths of humans due to a single ingestion. However, experiments in animals suggest that ingestion of 6 to 10 fluid ounces would cause death to a healthy 150 pound adult.

Long term exposure to PCBs at high levels of 1 to 10 mg/m³ may produce a burning feeling in the eyes, nose and face; dry throat; lung and throat irritation; nausea, dizziness, chloracne, and the aggravation of existing acne. Liver damage and digestive disturbance have been reported in some individuals. OSHA has identified PCBs as a dermal carcinogen. PCBs may impair the function of the immune system. PCBs at high levels have been shown to produce cancer and birth defects in laboratory animals. Whether PCBs produce these effects in humans is not known.

North and MSA do not approve the use of APRs for protection against 42% and 54% chlorodiphenyl as a determination in air is via collection on a particulate filter or with a florisil tube, adhering to NIOSH Method 5503 for PCBs' vapor. However, if it is a particulate concern via adhering to soil, level C with HEPA filters can be used.

## **5.2.2** Petroleum Hydrocarbons

Hydrocarbon fuels (including gasoline, diesel fuel and jet fuel) are complex mixtures of hydrocarbons and additives. The constituents of hydrocarbon fuels posses a range of vapor pressures. For highly volatile components, chronic exposures or exposures to a high concentration may cause unconsciousness, coma, and possible death from respiratory failure. Exposure to low concentrations of vapor may produce flushing of the face, slurred speech, and mental confusion. Fuels are also irritating to the skin, and may cause drying and dermatitis as a result of prolonged contact.

Various components and additives of the fuels can themselves present significant additional hazards. The aromatic compounds benzene, toluene, ethylbenzene and xylene (BTEX) are of greatest concern in relation to site investigation activities, and are addressed separately below. However some additives used for performance enhancement (e.g., methyl tert-butyl ether - MTBE), oxygenation (e.g., alcohols and MTBE) and water scavenging (e.g., ethylene glycol methyl ether - EGME) can also present significant hazards as a result of prolonged inhalation or skin exposure. In the past tetra-ethyl and tetra-methyl lead, both of which have been identified as carcinogens and present moderate skin contact hazards, were added to gasoline for anti-knock control.

There are no set limits for petroleum hydrocarbons, however, gasoline guidelines may be used instead. Both the OSHA PEL and ACGIH TLV for gasoline are 300 ppm. The OSHA PEL and ACGIH TLV for Oil Mist is 5mg/m<sup>3</sup>. Control of inhalation exposure to gasoline (and its various constituents and additives) can be accomplished through the use of air purifying respirators equipped with organic vapor cartridges. The use of skin protection (i.e., chemically - protective gloves) is required when handling gasoline-contaminated materials.

#### 5.2.3 Chromium and Compounds

## Elemental; CAS 7440-47-3; RTECS GB4200000

Chromium may exist in one of three valence states in compounds +2, +3, and +6. Chromium (elemental) is a steel-gray lustrous metal. Chromium metal is used for greatly increasing resistance and durability of metals and for chrome plating of other metals.

The PEL and TLV for divalent (+2) and trivalent (+3) chromium are  $0.5 \text{ mg/m}^3$ . For water soluble hexavalent (+6) chromium, the TLV is  $0.05 \text{ mg/m}^3$  and the ceiling PEL is  $0.1 \text{ mg/m}^3$ . The TLV for insoluble hexavalent (+6) chromium is  $0.01 \text{ mg/m}^3$ . The PEL for chromium metal is  $1 \text{ mg/m}^3$  and the TLV is  $0.5 \text{ mg/m}^3$ . The IDLH is  $250 \text{ mg/m}^3$ .

Routes of entry are inhalation, ingestion, and eye and skin contact. Points of attack for chromium metal and insoluble salts are the respiratory system and lungs. Local effects can include chromium compounds acting as allergens which cause dermatitis to exposed skin. With respect to systemic effects, chromium compounds in the trivalent (+3) state are of a low order toxicity. In the hexavalent (+6) state, chromium compounds are irritants and corrosive. Acute exposures to dust or mist may cause coughing and wheezing, headache, dyspnea, pain on deep inspiration, fever and weight loss. Hexavalent chromium is also associated with nasal septum perforation, liver/kidney damage, and again, sensitizing dermatitis. Chromium can affect workers when inhaled. Chromium metal ore has been reported to cause lung allergy. Chromium fumes can cause "metal fume fever", a flu-like illness lasting about 24 hours with chills, aches, cough and fever. Chromium particles can irritate the eyes.

Since chromium is a reasonably reactive metal, thought must be given to the actions of combined chromium and particularly to the presence or absence of carcinogenic effects in various chromium compounds. The table provided below differentiates between non-carcinogenic and carcinogenic chromium (VI) compounds as provided by NIOSH.

#### **Non-carcinogens**

| Evident                                | Inferred                      |
|--|-------------------------------|
| Sodium bichomate                       | Lithium bichromate            |
| Sodium chromate                        | Lithium chromate              |
| Chromium (VI) oxide                    | Potassium bichromate          |
|  | Potassium chromate            |
|  | Rubidium bichromate           |
|  | Rubidium chromate             |
|  | Cesium bichromate             |
|  | Cesium chromate               |
|  | Ammonium bichromate           |
|  | Ammonium chromate             |
| $\mathbf{C}$                           | arcinogens                    |
| Calcium chromate                       | Alkaline earth chromates and  |
|  | bichromates                   |
| Sintered calcium chromate              | Chromyl chloride              |
| Alkaline lime-roasting process residue | tert-Butyl chromate           |
| Zinc potassium chromate                | Other chromium (VI)           |
|  | materials not listed in table |

## Lead chromate

Level C (full-face with HEPA cartridge) can be used to 50 mg/m³ for chromium metal. For chromium (+2) and (+3), North and MSA approve level C (full-face with HEPA cartridge) up to 25 mg/m³. For hexavalent chromium (+6), North approves level C (full-face with HEPA cartridge) up to 2.5 mg/m³. Level B must be used above these values. Determination in air for chromium metal and both insoluble and soluble salts is via collection on a filter adhering to NIOSH chromium Method 7024 or OSHA Methods ID121 and ID125.

#### 5.2.4 Asbestos

| <b>Type</b>   | <u>CAS</u> | <u>RTECS</u> | <u>UN</u>   |
|---------------|------------|--------------|-------------|
| No Spec       | 1332-21-4  | C16475000    | UN2212/2590 |
| Amosite       | 12172-73-5 | C16477000    | UN2212      |
| Anthophyllite | 77536-67-5 | C16478000    | UN2590      |
| Crocidolite   | 12001-28-4 | C16479000    | UN2212      |

| Chrysotile | 12001-29-5 | C16478500 | UN2590 |
|------------|------------|-----------|--------|
| Tremolite  | 14567-73-8 | C16560000 | UN2590 |

Asbestos is a generic term that applies to a number of naturally occurring, hydrated mineral silicates incombustible in air and separable into filaments. The most widely used in industry in the United States is chrysoltile, a fibrous form of serpentine. Other types include amosite, crocidolite, tremolite, anthophyllite, and actinolite.

Potential Exposure: Most asbestos is used in the construction industry. Much of it is firmly bonded, i.e., the asbestos is "locked in" in such products as floor tiles, asbestos cements, and roofing felts and shingles; while the remaining 8% is friable or in powder form present in insulation materials, asbestos cement powders, and acoustical products.

As expected, these latter materials generate more airborne fibers than the firmly bonded products. The asbestos used in no construction industries is utilized in such products as textiles, friction material including brake linings, and clutch facings, paper, paints, plastics, roof coatings, floor tiles, and miscellaneous other products. Emissions of asbestos fibers into water and air are known to result from mining and processing of some minerals.

The exposure limits for the various forms of asbestos is as follows:

| <u>Asbestos</u> | OSHA PEL | ACGIH TLV |
|-----------------|----------|-----------|
| Amosite         | 0.1 f/cc | 0.5 f/cc  |
| Anthophylite    | 0.1 f/cc | 2 f/cc    |
| Crocidolite     | 0.1 f/cc | 0.2 f/cc  |
| Chrysotile      | 0.1 f/cc | 2 f/cc    |
| Tremolite       | 0.1 f/cc | 2 f/cc    |

Routes of entry are via inhalation and ingestion. The primary point of attack are the lungs. Harmful effects and symptoms provide evidence that exposure to asbestos fibers causes cancer and asbestosis in man (latent, chronic effects). Lung cancers and asbestosis have occurred following exposure to chrysoltile, crocidolite, amosite, and anthophyllite.

Mesotheliomas, lung and gastrointestinal cancers have been shown to be excessive in occupationally exposed persons, while mesotheliomas have developed also in individuals living in the neighborhood of asbestos factories and near crocidolite deposits, and in persons living with asbestos workers. Asbestosis has been identified among persons living near anthophyllite deposits. Likewise, all commercial forms of asbestos are carcinogenic in rats, producing lung carcinomas and mesotheliomas following their inhalation, and mesotheliomas. The size and shape of the fibers are important factors; fibers less than 0.5 um in diameter are most active in producing tumors.

Level C is acceptable for exposure to asbestos fibers up to 5 f/cc. Above this value, level B is required. Determination in air consists of collection on a filter adhering to NIOSH Method 7400 and OHSA Reference Method (ORM) 29 CFR 1926.58, Appendix A.

#### 5.2.5 **Dust**

Dust generated during coring or cutting of concrete, boring, or excavations can be hazardous to the respiratory system and irritating to the eyes. Dust can also carry the contaminants of concern potentially exposing workers by skin contact and inhalation. The ACGIH has established an eight-hour exposure limit for dust at 10 mg/M³. The concentrations of the chemicals of concern in the soil are low enough that inhalation of dust would not by itself be an exposure hazard. However contamination of skin and clothing can provide additional exposures. Therefore the generation and contact with dust should be minimized.

Water or other methods should be used to control dust during dusty operations; however care must be used to prevent electrical shock if electric tools are used in the same area. If dusts become irritating and engineering controls such as the application of water cannot be used, respirators should be donned as discussed in Section 7.

#### 5.2.6 NORM

Oil and gas exploration and production operations will often result in the accumulations of Naturally Occurring Radioactive Material (NORM) at elevated concentrations in by-product waste streams.

NORM is a naturally occurring ionizing radiation. The sources of most of the radioactive isotopes in NORM are formed by the decay of Uranium-238 and Thorium-232, which are naturally present in many oil, gas and water producing formations. Radon gas is produced during the decay of these sources.

NORM presents a potential hazard due to overexposure to naturally occurring ionizing radiation. Exposure to the hazards associated with these NORM sources occurs when employees contact the solid material (scale, sludge, cuttings, etc.).

#### 5.2.7 Assessment of Exposure Hazards

<u>Inhalation</u> - A direct push rig and hand augering will be used to collect near-surface/subsurface soil samples to depths of approximately 30 feet. Since only small volumes of soil are disturbed, the potential for airborne release of contaminants when performing this work is minimal.

<u>Skin Contact</u> - To avoid direct dermal contact with contaminated media, protective clothing, as described in Section 7 will be required when collecting samples and decontaminating sampling equipment.

<u>Ingestion</u> – Protection against exposure via ingestion can be accomplished by performance of proper decontamination procedures when exiting contaminated work areas (see Section 8.2).

#### 5.3 PHYSICAL HAZARDS

The physical hazards anticipated during the Phase II investigation at the Former Wire Pro facility are discussed below.

- Hazardous Noise Workers may be exposed to hazardous levels of noise from drilling rig and supporting equipment. Hearing protection will be provided to all workers.
- Drill Rigs/Heavy Equipment Drill rigs have rotating equipment that could entangle clothes and as well as hands/arms. Also, hydraulic lines operate under pressure and could rupture discharging heated hydraulic fluid or the line could whip under pressure and strike a worker. When in motion, drill rigs could strike equipment, other vehicles, overhead power lines, or workers.
- Overhead Electrical Lines The mast of the drill rig could contact overhead electrical lines causing electrocution of nearby workers or workers who were in contact with the rig. The drill rig could also catch fire when exposed to high voltage.
- Subsurface Utilities The drill rig could drill into subsurface utility lines (e.g., electrical, fiber optic, gas line, etc.).
- Heat Stress Summer in Louisiana can present outdoor workers with extreme heat stress resulting from temperatures in excess of 100 F along with the high humidity.
- Power Hand/Manual Hand Tools -The use of manual hand or power tools presents workers with hazards such as cuts, abrasions, contusions, and electrocution (power tools only).
- Severe Weather The SSO will monitor local radio, NOAA weather radio, Internet weather sites, or other weather warning systems to plan for and identify possible severe weather situations at the project site. Site work may be delayed, postponed, or cancelled due to severe weather. Vehicle and equipment use at a site may also be restricted under unfavorable weather conditions.
- Lightning
  - Lightning can strike up to a distance of 10 miles, but thunder can only be heard at a distance of 8 miles. If you can hear thunder, you are at risk of being struck by lightning.
  - Therefore, if site personnel working outdoors hear thunder or see lightning, work will be stopped and personnel will move to an indoor location.
  - If indoor facilities are not available, personnel should seek shelter inside passenger vehicles such as cars and pickups. Avoid touching metal parts of the vehicle.

- During a thunderstorm avoid trees/poles, standing water, high areas, very low areas and streams, and metal structures (fences, scaffolding, etc.).
- Work will resume 30 minutes following the final observance of thunder and/or lightning and when the storm is moving away from the work area.

#### 5.4 BIOLOGICAL HAZARDS

The site consists of undeveloped and/or partially developed property. Bears, snakes and spiders are the biological hazards that are anticipated to be most applicable to these sites.

## 5.4.1 Insects and Spiders

Spiders and wasps may be found in derelict buildings, sheltered areas, and even on open ground. Exercise care when collecting samples and avoid reaching into areas where visibility is limited. If stung by a wasp or bee, or bitten by a spider, notify a co-worker or someone who can help if you should you have an allergic reaction. Stay calm and treat the area with ice or cold water. Seek medical attention if you have any reactions to the sting such as developing a rash, excessive swelling or pain at the site of the bite or sting or any swelling or numbness beyond the site of the bite or sting.

Studies have determined that repellants containing DEET as a main ingredient are most effective against spiders, mosquitoes, and other insects. DEET can be directly applied to the exposed skin of adults and/or clothing. Permanone® is another repellent however; it can only be directly applied to clothing.

#### **5.4.2** Ticks

Ticks are bloodsuckers, attaching themselves to warm-blooded vertebrates to feed. Deer ticks are the most common carriers of Lyme disease, a bacterial infection that is transmitted to humans through the bite of the tick.

Personnel should carefully inspect themselves each day for the presence of ticks or any rashes. This is important since prompt removal of the tick can prevent disease transmission. Female deer ticks are about one-quarter inch in length and are black and brick red in color. Males are smaller and all black.

Removal of the tick is important in that the tick should not be crushed and care must be taken so that the head is also removed. If the head is not completely removed or if the tick is allowed to remain for days feeding on human blood, a condition known as tick paralysis can develop, which is due to a neurotoxin that the tick apparently injects while engorging. This neurotoxin acts upon the spinal cord causing incoordination, weakness and paralysis.

One characteristic symptom of Lyme disease is a bulls-eye rash that develops around the bite site. The rash appears in about 60-80% of all Lyme disease cases. Contact your DHSM immediately if you develop such a rash.

Tick season lasts from April through October; peak season is May through July. Wear light-colored clothing (easier to spot ticks) with long sleeves and make sure that shirts are tucked into pants and pants are tucked into socks or boots. Ticks have a tendency to crawl upwards. These procedures will make it more difficult for a tick to reach your skin.

Studies have determined that repellants containing DEET as a main ingredient are most effective against spiders and ticks. DEET can be directly applied to the exposed skin of adults and/or clothing. Permanone® is another repellent however; it can only be directly applied to clothing.

#### 5.4.3 Snakes

Poisonous snakes are found in most of the states we work in. The same cautions discussed regarding spiders and wasps apply. If bitten, stay calm and seek help. Do NOT cut the bite area, but use a snakebite kit if available. Try to be able to identify the snake to medical personnel. Remember that bites of nonpoisonous snakes can become infected. Get medical attention for any animal bite.

## 5.5 RADIOLOGICAL HAZARDS

Radiological hazards are not anticipated to be applicable to this project.

#### 5.6 ULTRAVIOLET HAZARDS

Currently the average UV Index for February and March is LOW. The average forecasted UV Index for the Texas area from April through September run from 6 to 8 with July averaging 8 to 11 meaning that worker's UV exposures normally are MODERATE TO HIGH with July averaging in the EXTREME HIGH range. Workers performing field work outdoors may be susceptible to sunburn if not properly protected with sunscreen or protective clothing and hats.

#### 5.7 OTHER HAZARDS

Due to recent health concerns throughout the United States, hands should be frequently washed with soap/water or an alcohol-based antibacterial hand wash, especially prior to eating/drinking.

## 6.0 ACTIVITY SPECIFIC REQUIREMENTS

#### 6.1 SUPPLEMENTAL SAFETY PROCEDURES

As discussed in Section 5.0, personnel may be exposed to a variety of chemical, physical, radiological, and biological hazards resulting from task- or equipment-specific activities. The requirements for the control of many of these hazards are discussed in SOPs found in the 300 to 500 Series of the U.S. Operations SH&E Manual.

Specific procedures applicable to this project include:

- S3NA-305-PR Hand and Power Tools
- S3NA-309-PR Mobile or Heavy Equipment
- S3NA-313-PR Wildlife, Plants and Insects
- S3NA-405-PR Drilling and Boring
- S3NA-412-PR Power Actuated Tools
- S3NA-507-PR Hazard Materials Communication / WHMIS
- S3NA-509-PR Hazardous Waste Operations and Emergency Response
- S3NA-517-PR Radiation, Non-Ionizing

In addition, the following supplemental procedures have been developed to address requirements not covered within the established AECOM SOPs (SH&E 300 to 500-series). SOPs and supplemental procedures are specified on a task-specific basis in the individual THAs found in Attachment A.

#### **6.1.1** Subsurface Utilities

Various forms of underground/overhead utility lines or pipes may be encountered during site activities. Prior to the start of intrusive operations, utility clearance is mandated, as well as obtaining authorization from all concerned public utility department offices. Should intrusive operations cause equipment to come into contact with utility lines, the SSO and the Safety Professional will be notified immediately. Work will be suspended until the applicable utility agency is contacted and the appropriate actions for the particular situations can be taken. For this project, the national one-call 811 number or the Michigan One-Call service 800-482-7171 may be used. The following precautions should also be observed:

- Obtaining as-built drawings for the areas being investigated from the property owner;
- Visually reviewing each proposed soil boring locations with the property owner or knowledgeable site representative;
- Performing a geophysical survey to locate utilities;
- Hiring a private line locating firm to determine the location of utility lines that are present at the property;
- Identifying a no-drill zone; or
- Hand digging in the proposed soil boring locations if insufficient data is available to accurately determine the location of the utility lines.

#### **6.1.2** Hazardous Noise Environments

Working around drill rigs and other heavy equipment often creates excessive noise. The effects of noise can include physical damage to the ear, pain, and temporary and/or permanent hearing loss. Workers can also be startled, annoyed, or distracted by noise during critical activities.

AECOM has compiled noise monitoring data that indicates that work locations within 25 feet of operating heavy equipment (e.g., drill rigs, earthworking equipment) can result in exposure to hazardous levels of noise (levels

greater than 90 dBA). Accordingly, all personnel are required to use hearing protection (earplugs or earmuffs) within 25 feet of any operating piece of heavy equipment.

## 6.1.3 Slip, Trips and Fall Hazards

On any work area, it is expected that the ground might be uneven. The ground surface might be unreliable due to settling. Surface debris might be present and wet or swampy areas can exist.

Employees should walk around, not over or on top of debris or trash piles. When carrying equipment, identify a path that is clear of any obstructions. It might be necessary to remove obstacles to create a smooth, unobstructed access point to the work areas on site.

During the winter months, snow shovels and salt crystals should be kept on site to keep work areas free of accumulated snow and ice.

Maintaining a work environment that is free from accumulated debris is the key to preventing slip, trip and fall hazards at construction sites. Essential elements of good housekeeping include

- Orderly placement of materials, tools and equipment;
- Placing trash receptacles at appropriate locations for the disposal of miscellaneous rubbish;
- Prompt removal and secure storage of items that are not needed to perform the immediate task at hand; and,
- Awareness on the part of all employees to walk around, not over or on, equipment that might have been stored in the work area.

#### **6.1.4 Drill Rig Operations**

The use of drill rigs in areas where unprotected personnel are working warrants special attention on the part of all personnel. Operators should ensure that equipment is working properly and is being run in a safe manner and should be aware of the location of unprotected personnel at all times while operating this machinery to avoid serious accidents.

In order to assure that all equipment used on site presents no unwarranted safety hazards, the owner/operator of each drill rig must perform a safety evaluation and certification in accordance with the procedures and requirements found in S3NA-405-PR Drilling and Boring and complete the *Drill Rig Safety Inspection Checklist*. This checklist must be provided to the Site Supervisor/SSO daily for inclusion in the project files. Any discrepancies noted on the checklist must be corrected prior to the initiation of drilling activities.

#### 6.1.5 Manual Lifting

Most materials associated with investigation, remedial, or construction-related activities are moved by hand. The human body is subject to severe damage in the forms of back injury, muscle strains, and hernia if caution is not observed in the handling process. Whenever possible, use at least two people to lift, or roll/lift with your arms as close to the body as possible. Under no circumstances should any one person lift more than 49 pounds unassisted. For additional requirements refer to S3NA-308-PR Manual Lifting, Field. Additional measures related to manual materials handling activities may be applicable.

#### **6.1.6** Powered Hand Tools

The use of any powered hand tool will comply with the requirements in S3NA-305-PR Hand and Power Tools. All electrically powered hand tools will be connected through a ground fault circuit interrupter (GFCI). All tools will be inspected prior to use. For those tool(s) that are damaged or otherwise defective, the tool will be red tagged and taken out of service. Workers utilizing powered hand tools will be provided with the applicable Equipment Safety Cards in Attachment C and briefed regarding the hazards presented by that particular tool. All workers must be trained on the use of the particular tool they are utilizing and this training must be documented. The SSO/site supervisor will maintain the training records onsite.

## **6.1.7** Groundwater Level Static Checks

Prior to performing any groundwater level static checks ensure a photoionization detector (PID) is present and field checked for operational compliance. Obtain appropriate instrument for measuring water level and ensure it

is operating correctly prior to departing to the field. If the groundwater level you are measuring is in a preexisting well use caution while opening well cap for critters that may have entered and let it air out for 15 minutes. Use the PID to measure the head space (see section 6.2.1, Table 6-2) and if the air meets acceptable criteria proceed with the tasking.

## 6.1.8 Soil Screening "Shaker" Operations

During this project specific equipment will be utilized to separate soil for aggregate to determine in potential contaminates remain on the aggregate. A secondary containment system will be placed under the Shaker to contain all potential debris that may be discharged while the unit is in operation and at all exit trails/points. While this unique equipment is in operation the following will be observed:

- Hearing protection
- Safety glasses
- Tyveks
- Leather gloves/nitrile gloves
- Onsite training

#### 6.1.9 Soil Sampling

Soil samples can be collected from Geo-probe points, hand augering, from the surface and during well installation activities. During sampling activities, appropriate air monitoring will be conducted and the appropriate chemical resistant PPE will be worn to protect against exposure. The major activities involved with collecting samples from the site and surrounding properties include the following:

- Pre-sampling event notifications and approval
- Set-up for sampling activities
- Soil samples will be collected during well installation activities using HSA drilling techniques or from Geo-probe points.
- Sample prep and sample shipping
- Administrative activities

## **6.1.10** Heavy Equipment Operations

In order to assure that all equipment used on site presents no unwarranted safety hazards, the owner of each piece of heavy equipment must perform a safety evaluation and certification in accordance with the procedures and requirements found in S3NA-309-PR Mobile or Heavy Equipment. The owner/vendor supplying the heavy equipment must complete the S3NA-309-FM1 Certification Form for Machinery and Mechanized Equipment and then submit the completed form to the SSO prior to the equipment's use onsite. Each operator must complete the S3NA-309-FM2 Heavy Equipment Pre-Operations Inspection Checklist daily and submit the completed form(s) to the SSO at the end of the week/month.

#### **6.2 EXPOSURE MONITORING PROCEDURES**

Monitoring procedures will be employed during site characterization activities to assess employee exposure to chemical and physical hazards. Monitoring will consist primarily of onsite determination of various parameters (e.g., airborne contaminant concentrations and heat stress effects), but may be supplemented by more sophisticated monitoring techniques, if necessary.

## **6.2.1** Real-Time Exposure Measurement

Monitoring shall be performed within the work area on site in order to detect the presence and relative levels of toxic substances. The data collected throughout monitoring shall be used to determine the appropriate levels of PPE. Monitoring shall be conducted as specified in each THA/JSA (Attachment A) as work is performed.

Table 6-1 specifies the real-time monitoring equipment, which will be used for this project.

Table 6-1: Monitoring Parameters and Equipment

| INSTRUMENT  | MANUFACTURER/MODEL*   | SUBSTANCES DETECTED   |
|---|---|---|
| Photo Ionization Detector (PID)   | RAE Systems mini-RAE<br>Photovac Microtip<br>HNu Model Hnu<br>(min. 10.6 eV bulb) | Petroleum hydrocarbons Organic Solvents   |
| Multi or 4 Gas Detectors  | RAE Systems Multi-RAE   | Lower Explosive Limit Oxygen (O <sub>2</sub> ) Carbon Monoxide (CO) Hydrogen Sulfide (H <sub>2</sub> S) |
| Combustible Gas Indicator (CGI) May be combined with individual or multi-gas detectors. |   | Explosivity   |
| Particulate Monitor Based on 1300 mg/kg   | MIE Model PDM-3<br>mini-RAM, Personal Data Ram                                    | Aerosols, mist, dust, and fumes   |
| Colorimetric Detector Tubes   | Sensidyne Draeger   | Benzene 0.5–10 ppm  |

<sup>\*</sup>Or similar unit, as approved by the SH&E Professional

#### 6.2.1.1 Health and Safety Action Levels

An action level is a point at which increased protection is required due to the concentration of contaminants in the work area or other environmental conditions. The concentration level (above background level) and the ability of the PPE to protect against that specific contaminant determine each action level. The action levels are based on concentrations in the breathing zone.

If ambient levels are measured which exceed the action levels in areas accessible to unprotected personnel, necessary control measures (barricades, warning signs, and mitigative actions, etc.) must be implemented prior to commencing activities at the specific work area.

Personnel should also be able to upgrade or downgrade their level of protection with the concurrence of SSO or the Safety Professional.

#### Reasons to upgrade:

- Known or suspected presence of dermal hazards.
- Occurrence or likely occurrence of gas, vapor, or dust emission.
- Change in work task that will increase the exposure or potential exposure to hazardous materials.

## Reasons to downgrade:

- New information indicating that the situation is less hazardous than was originally suspected.
- Change in site conditions that decrease the potential hazard.
- Change in work task that will reduce exposure to hazardous materials.

**Table 6-2: Monitoring Procedures and Action Levels for Intrusive Activities (including Sampling)** 

| PARAMETER   | ZONE<br>LOCATION AND<br>MONITORING<br>INTERVAL                                  | RESPONSE LEVEL<br>(ABOVE<br>BACKGROUND)         | RESPONSE ACTIVITY   |
|---|---|---|---|
|   |   | < 10 units                                      | Continue work in required PPE and continue monitoring.  |
| VOCs<br>(total by PID)  | Breathing Zone, every 30  | 10-25 units (sustained for more than 5 minutes) | Continue work in required PPE, continue monitoring, and use benzene detector tubes                |
|   | minutes during well development activities                                      | 25-50 units (sustained for more than 5 minutes) | Contact the SSO, implement mitigation measures, upgrade PPE to Level C (organic vapor cartridge). |
|   |   | > 50 units (sustained for more than 5 minutes)  | Cease work, exit, and contact the SP and PM.  |
| Aerosols (total by  | Ambient near workers at   | 0-5 mg/m <sup>3</sup>                           | Continue work in Level D and continue monitoring  |
| aerosol monitor)<br>(PCB's)<br>Based on 13,000                                | nonitor) Shaker every 30 minutes during Shake Operations                        | 05-10 mg/m <sup>3</sup>                         | Upgrade to Level C, Implement dust suppression measures; contact the SSO & SP                     |
| mg/kg   |   | >10 mg/m <sup>3</sup>                           | Cease activities, implement more effective dust suppression measures; contact the SSO & SP        |
| Aerosols (total by<br>aerosol monitor)<br>(PCB's)<br>Based on 13,000<br>mg/kg | Perimeter at Shaker every<br>30 minutes during Shake<br>Operations (Below AL's) | > 5 mg/m <sup>3</sup>                           | Cease activities, implement more effective dust suppression measures; contact the SSO & SP        |

Note: All VOC monitoring will be conducted using PID only. Aerosols conducted with MiniRam

Table 6-3: Air Monitoring During Remediation /Excavation

| Task   | Action Limit                                    | Respiratory Protection   | Level |
|--|---|--|-------|
| All tasks with the potential to produce Dust (every 30 mins)(Based on                                | <5.0 mg/m³ particulates in air                  | None required  | D     |
| 13,000mg/kg of PCB's in soil with sporadic concentrations in the work                                | 5.0 to 10 mg/m <sup>3</sup> particulates in air | Suspend activities and apply dust suppression techniques until levels have returned to >5.0 mg/m <sup>3</sup>  | D     |
| area) (These AL's are<br>applicable to the<br>additional chemicals for<br>the concrete slab as well) | >10.0 mg/m³ particulates in air                 | Edge of Exclusion Zone (Excavation), Cease activities and contact the SSO & SP, Full face mask respirator with combination organic vapor/HEPA cartridges may be required | С     |

(ACGIH Total Respiratory Protection Value of 10 mg/m<sup>3</sup>)

**Table 6-4: Air Monitoring During Remediation / Excavation (Perimeter)** 

| Task  | Action Limit                                     | Respiratory Protection  | Level |
|---|--|---|-------|
| All tasks with the potential to produce Dust (every 30  | <2.5 mg/m³ particulates in air                   | None Required   | D     |
| mins)(Based on<br>13,000mg/kg of PCB's in<br>soil with sporadic<br>concentrations in the work | 2.5 to 5.0 mg/m <sup>3</sup> particulates in air | Suspend activities and apply dust suppression techniques until levels have returned to >5.0 mg/m <sup>3</sup> | D     |
| area), readings obtained at perimeter of site activities                                      | >5.0 mg/m³ particulates in air                   | Edge of Exclusion Zone (Excavation), Cease activities and contact the SSO & SP                                | С     |

| Parameter       | Monitor                 | Action Level      | Response Activity   |
|-----------------|-------------------------|-------------------|---|
| Low Level Gamma | Measured at waist level | < 200 μR/hr       | Continue working in designated PPE ensemble                   |
| Low Level Gamma | Measured at waist level | 200 μR/hr -2mR/hr | Cease activities, contact Site RSO, investigate readings      |
| Low Level Gamma | Measured at waist level | >2mR/hr           | Cease activities, exit immediate area and contact<br>Site RSO |

**Table 6-5: NORM Monitoring Procedures and Action Levels** 

Action Level is twice background normally (one must identify a background prior to entering an area where equipment may cause elevated readings).

# 6.2.1.2 Monitoring Equipment Calibration

All instruments used will be calibrated at the beginning and end of each work shift, in accordance with the manufacturer's recommendations. If the owner's manual is not available, the personnel operating the equipment will contact the applicable office representative, rental agency or manufacturer for technical guidance for proper calibration. If equipment cannot be pre-calibrated to specifications, site operations requiring monitoring for worker exposure or off-site migration of contaminants will be postponed or temporarily ceased until this requirement is completed.

## 6.2.1.3 Personal Sampling

Should site activities warrant performing personal sampling to better assess chemical exposures experienced by AECOM employees, the SSO, under the direction of a Certified Industrial Hygienist (CIH), will be responsible for specifying the monitoring required. Within five working days after the receipt of monitoring results, the CIH will notify each employee, in writing, of the results that represent that employee's exposure. Copies of air sampling results will be maintained in the project files.

If the site activities warrant, the subcontractor will ensure its employees' exposures are quantified via the use of appropriate sampling techniques. The subcontractor shall notify the employees sampled in accordance with health and safety regulations, and provide the results to the SSO for use in determining the potential for other employees' exposure.

#### 6.2.2 Biological Hazard Injury and Illness Prevention

Contact with bodies of water, animals, insects, and plants can cause injury and illness to personnel. Care must be taken to ensure that these types of injuries are avoided. Preventative measures are outlined in S3NA-313-PR Wildlife, Plants and Insects. Some examples of biological hazards include:

- 1. Natural and artificial bodies of water (e.g., lakes, rivers, ponds, lagoons, etc.) may contain a variety of microorganisms. Microorganisms, in particular, present a significant hazard to personnel who may come into contact with water bodies. Contact with microorganisms in water may result in dermatitis, infection (i.e., in cuts/lacerations), digestive distress, and other diseases. Always be aware of areas that may contain excessive amounts of microorganisms. Such areas may include areas of standing water; areas of warm water (i.e., cooling tower effluents, etc.); and areas downstream of municipal wastewater treatment. To prevent exposure to microorganisms in water, always adhere to the following:
  - Wear protective gloves (i.e., nitrile, etc.) and other appropriate PPE to prevent skin contact with water
  - Never drink from natural or artificial bodies of water. Such water is considered non-potable and is not safe for drinking.
- 2. Wild animals, such as bears, snakes, raccoons, squirrels, and rats. These animals not only can bite and scratch, but can carry transmittable diseases (e.g., rabies). Avoid the animals whenever possible. If bitten, go to the nearest medical facility.

- 3. Insects such as mosquitoes, ticks, bees, and wasps. Mosquitoes can potentially carry and transmit the West Nile Virus. Ticks can transmit Lyme disease or Rocky Mountain Spotted Fever. Bees and wasps can sting by injecting venom, which causes some individuals to experience anaphylactic shock (extreme allergic reaction). Whenever you will enter areas that provide a habitat for insects (e.g., grass areas, woods), wear light-colored clothing, long pants and shirt, and spray exposed skin areas with a DEET-containing repellent. Keep away from high grass wherever possible. Keep your eyes and ears open for bee and wasp nests. If bitten by insects, see a doctor if there is any question of an allergic reaction.
- 4. Plants such as poison ivy and poison oak can cause severe rashes on exposed skin. Be careful where you walk, wear long pants, and minimize touching exposed skin with your hands after walking through thickly vegetated areas until after you have thoroughly washed your hands with soap and water. Examples of common poisonous or irritating plant species, common to the United States, are shown in Table 6-3.

Table 6-6: Hazardous Plant Identification Guide

# **Poison Ivv** • Grows in West, Midwest, Texas, East Several forms – vine, trailing shrub, or Three leaflets (can vary 3-9) Leaves green in summer, red in fall Yellow or green flowers White berries Poison Oak Grows in the East (NJ to Texas), Pacific Coast 6-foot tall shrubs or long vines Oak-like leaves, clusters of three Yellow berries **Poison Sumac** Grows in boggy areas, especially in the Southwest and Northern states Shrub up to 15 feet tall Seven to 13 smooth-edged leaflets Glossy pale yellow or cream-colored berries

# 6.2.2.1 Response Measures for Contact with Hazardous Plants

If you have been exposed to poison ivy, oak, or sumac, act quickly because the toxin in the plants penetrates the skin within minutes. If possible, stay outdoors until you complete the first two steps:

- 1. Cleanse the exposed skin with generous amounts of isopropyl alcohol
- 2. Wash the skin with water
- 3. Take a regular shower with soap and warm water. Do not use soap until this point because it will pick up the toxin from the surface and move it around
- 4. Wash clothes, tools, and anything else that may have been in contact with the toxin, with alcohol and water. Be sure to wear hand protection during that process

Signs and symptoms of exposure include redness and swelling that appears 5 mins to 2 hours after exposure. Blistering and itching will follow. If you have had a severe reaction in the past, you should see an occupational physician right away. After binding, plain soap and water may not be effective in removing urushiol (the oil

commonly disseminated by these particular plants). Otherwise, according to the Federal Drug Administration (FDA), there are quite a few effective over-the-counter (OTC) products to help with symptoms, including Cortaid and Lanacort, baking soda, Aveeno oatmeal bath, and calamine lotion. These OTC remedies may produce mild and temporary relief of the itch but will not remove the oil. Again, cleanse immediately after exposure w/plain soap/water, then wash with products like OTC Zanfel per package instructions. Wash all clothing/bedding in hot soapy water since urushiol oil from the plant will stay on them and if worn/touched, will continue to re-expose if contracted with any part of one's skin. AECOM's occupational care consultant, or a pharmacist, can help you make an educated choice.

#### 6.2.3 Snakes

Venomous snakes can be encountered on or near the project site. If bitten, stay calm and seek help. Do NOT cut the bite area. Try to be able to identify the snake to medical personnel. Remember that bites of non venomous snakes can become infected. Get medical attention for any animal bite.

#### **6.2.4** Environmental Protection

Protection of the surrounding environment is not expected to be an issue as a result of the proposed work at the Former Wire Pro Facility site. Environmental THA's for various tasks have been developed by AECOM to assess the risks of the proposed work at the site. Environmental Task hazard analysis is a technique used to identify environmental hazards and hazard controls associated with the work being performed at a site. An Environmental THA focuses on the relationship between the environment, the task, the resources required to complete the task, and the work environment. These variables must be evaluated to identify the potential environmental hazards associated with the task. Once identified, steps can be taken to eliminate, reduce, or control the hazards to an acceptable risk level.

# 7.0 PERSONAL PROTECTIVE EQUIPMENT

## 7.1 PERSONAL PROTECTIVE EQUIPMENT

The purpose of personal protective equipment (PPE) is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. S3NA-208-PR Personal Protective Equipment Program, lists the general requirements for selection and usage of PPE. Table 7-1 lists the minimum PPE required during site operations and additional PPE that may be necessary. The specific PPE requirements for each work task are specified in the individual JSA/THAs found in Attachment A.

By signing this HASP you are agreeing that you have been properly trained in the use, limitations, care and maintenance of the protective equipment you will use at this project. If you have not received training on the proper use, care, and limitations of the PPE required for this project please see the PM/SSO for the proper training prior to signing this HASP.

**Table 7-1: Personal Protective Equipment** 

| TYPE                              | <u>MATERIAL</u>   | ADDITIONAL INFORMATION                               |  |  |
|-----------------------------------|---|--|--|--|
| Minimum PPE                       |   |  |  |  |
| Safety Vest                       | ANSI Type II high-visibility  | Must have reflective tape/be visible from all sides  |  |  |
| Boots (Insulated during winter)   | Leather   | ANSI approved safety toe                             |  |  |
| Safety Glasses                    |   | ANSI Approved; ≥98% UV protection                    |  |  |
| Hard Hat                          |   | ANSI Approved; recommended wide-brim                 |  |  |
| Work Uniform                      |   | No shorts/cutoff jeans or sleeveless shirts          |  |  |
|                                   | Additional Pl   | PE   |  |  |
| Hearing Protection                | tection Ear plugs and/ or muffs In hazardous noise areas  |  |  |  |
| Leather Gloves                    |   | Required for drilling personnel.                     |  |  |
| <b>Protective Chemical Gloves</b> | Inner: N/A<br>Outer: Nitrile Type   |  |  |  |
| Level C Respiratory Protection    | MSA (Full Face or equivalent) equipped GME/P100 or North is 38153, December 1.00 Cartridge/P100 |  |  |  |
| Faceshield                        |   | Safety glasses or goggles must be worn concurrently. |  |  |
| Sunscreen                         | SPF 30 or higher  |  |  |  |

#### 7.2 RESPIRATORY PROTECTION

Respiratory protection, as described below, is required if airborne dust levels in the workers' breathing zone, as measured on the mini-RAM or equivalent dust monitoring method, are sustained above the action limit in Table 7-2:

**Table 7-2: Respiratory Protection (Shaker and Remedial Activities)** 

| TASK  | ACTION LIMIT                            | RESPIRATORY PROTECTION   |
|---|---|--|
| Remedial activities producing noticeable airborne dust in areas of PCB's. | 10 mg/m³ for 15 minutes on the mini-RAM | Full Face respirator with (Magenta) HEPA cartridges and Organic Vapor Cartridges |

Respiratory protection should also be donned if significant visible airborne dust is being produced during any operations.

All employees who are expected to don respiratory protection must have successfully passed a qualitative or quantitative fit-test within the past year for the brand, model and size respirator they plan to don during the installation of the trench. Employees must be clean shaven, must have been trained in respiratory protection, and must have passed their annual medical exam in order to wear a respirator.

#### 7.3 PPE DOFFING AND DONNING INFORMATION

The following information is to provide field personnel with helpful hints that, when applied, make donning and doffing of PPE a more safe and manageable task:

- Never cut disposable booties from your feet with basic utility knives. This has resulted in workers cutting through the booty and the underlying sturdy leather work boot, resulting in significant cuts to the legs/ankles. Recommend using a pair of scissors or a package/letter opener (cut above and parallel with the work boot) to start a cut in the edge of the booty, then proceed by manually tearing the material down to the sole of the booty for easy removal.
- When applying duct tape to PPE interfaces (wrist, lower leg, around respirator, etc.) and zippers, leave approximately one inch at the end of the tape to fold over onto itself. This will make it much easier to remove the tape by providing a small handle to grab while still wearing gloves. Without this fold, trying to pull up the tape end with multiple gloves on may be difficult and result in premature tearing of the PPE.
- Have a "buddy" check your ensemble to ensure proper donning before entering controlled work areas. Without mirrors, the most obvious discrepancies can go unnoticed and may result in a potential exposure situation.
- Never perform personal decontamination with a pressure washer.

#### 7.4 DECONTAMINATION

## 7.4.1 General Requirements

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities (e.g., avoid sitting or leaning on, walking through, dragging equipment through or over, tracking, or splashing potential or known contaminated/impacted materials, etc).

All personal decontamination activities shall be performed with an attendant (buddy) to provide assistance to personnel that are performing decontamination activities. Depending on specific site hazards, attendants may be required to wear a level of protection that is equal to the required level in the Exclusion Zone (EZ).

All persons and equipment entering the EZ shall be considered contaminated, and thus, must be properly decontaminated prior to entering the SZ.

Decontamination procedures may vary based on site conditions and nature of the contaminant(s). If chemicals or decontamination solutions are used, care should be taken to minimize reactions between the solutions and contaminated materials. In addition, personnel must assess the potential exposures created by the decontamination chemical(s) or solutions. The applicable Material Safety Data Sheet (MSDS) must be reviewed, implemented, and filed by personnel contacting the chemicals/solutions.

All contaminated PPE and decontamination materials shall be contained, stored and disposed of in accordance with site-specific requirements determined by site management.

#### 7.4.2 Decontamination Equipment

The equipment required to perform decontamination may vary based on site-specific conditions and the nature of the contaminant(s). The following equipment is commonly used for decontamination purposes:

- Soft-bristle scrub brushes or long-handled brushes to remove contaminants;
- Hoses, buckets of water or garden sprayers for rinsing;

- Large plastic/galvanized wash tubs or children's wading pools for washing and rinsing solutions;
- Large plastic garbage cans or similar containers lined with plastic bags for the storage of contaminated clothing and equipment;
- Metal or plastic cans or drums for the temporary storage of contaminated liquids; and
- Paper or cloth towels for drying protective clothing and equipment.

#### 7.4.3 Personal/Equipment Decontamination

All equipment leaving the EZ shall be considered contaminated and must be properly decontaminated to minimize the potential for exposure and off-site migration of impacted materials. Such equipment may include, but is not limited to: sampling tools, heavy equipment, vehicles, PPE, support devices (e.g., hoses, cylinders, etc.), and various handheld tools.

All employees performing equipment decontamination shall wear the appropriate PPE to protect against exposure to contaminated materials. The level of PPE may be equivalent to the level of PPE required in the EZ. Other PPE may include splash protection, such as face-shields and splash suits, and knee protectors. Following equipment decontamination, employees may be required to follow the proper personal decontamination procedures above.

For larger equipment, a high-pressure washer may need to be used. Some contaminants require the use of a detergent or chemical solution and scrub brushes to ensure proper decontamination.

For smaller equipment, use the following steps for decontamination:

- 1. Remove majority of visible gross contamination in EZ.
- 2. Wash equipment in decontamination solution with a scrub brush and/or power wash heavy equipment.
- 3. Rinse equipment.
- 4. Visually inspect for remaining contamination.
- 5. Follow appropriate personal decontamination steps outlined above.

All decontaminated equipment shall be visually inspected for contamination prior to leaving the Contaminant Reduction Zone (CRZ). Signs of visible contamination may include an oily sheen, residue or contaminated soils left on the equipment. All equipment with visible signs of contamination shall be discarded or redecontaminated until clean. Depending on the nature of the contaminant, equipment may have to be analyzed

#### 8.0 SITE CONTROL

#### 8.1 GENERAL

The purpose of site control is to minimize potential contamination of workers, protect the public from site hazards, and prevent vandalism. The degree of site control necessary depends on the site characteristics, site size, and the surrounding community.

Controlled work areas will be established at each work location, and if required, will be established directly prior to the work being conducted. Diagrams designating specific controlled work areas will be drawn on site maps, posted in the support vehicle or trailer and discussed during the daily safety meetings. If the site layout changes, the new areas and their potential hazards will be discussed immediately after the changes are made. General examples of zone layouts have been developed for drilling and earth moving activities [(e.g., excavating, trenching, etc.) and are attached to this section.

#### 8.2 CONTROLLED WORK AREAS

Each HAZWOPER controlled work area will consist of the following three zones:

- Exclusion Zone: Contaminated work area.
- Contamination Reduction Zone: Decontamination area.
- <u>Support Zone</u>: Uncontaminated or "clean area" where personnel should not be exposed to hazardous conditions.

Each zone will be periodically monitored in accordance with the air monitoring requirements established in this HASP. The Exclusion Zone and the Contamination Reduction Zone are considered work areas. The Support Zone is accessible to the public (e.g., vendors, inspectors).

#### 8.2.1 Exclusion Zone

The Exclusion Zone is the area where primary activities occur, such as sampling, remediation operations, installation of wells, cleanup work, etc. This area must be clearly marked with hazard tape, barricades or cones, or enclosed by fences or ropes. Only personnel involved in work activities, and meeting the requirements specified in the applicable THA/JSA and Sections 4.1 and 4.2 will be allowed in an Exclusion Zone.

The extent of each area will be sufficient to ensure that personnel located at/beyond its boundaries will not be affected in any substantial way by hazards associated with sample collection activities. To meet this requirement, the following minimum distances will be used:

- **HSA/DPT Drilling**. Determine the mast height of the drill rig. This height will be cleared, if practical, in all directions from the bore-hole location and designated as the exclusion zone. The cleared area will be sufficient to accommodate movement of necessary equipment and the stockpiling of spoils piles.
- **Slab Cutting**. A distance of 10 feet in all directions from the cutting location will be cleared when using manual methods (i.e., chisel or equivalent) and 20 feet when using a concrete saw.
- **Hand Augering**. A distance of 10 feet will be cleared in all directions from the sampling location in order to accommodate additional sampling equipment.
- **Direct Push Drilling Activities**. A distance of 20 feet in all directions will be cleared from the rig.
- **Potholing Activities.** A distance of 25 feet will be cleared in all directions from the backhoe and the location where the excavated soil is deposited.
- **Slab Cutting**. A distance of 10 feet in all directions from the cutting location will be cleared when using manual methods (i.e., chisel or equivalent) and 20 feet when using a concrete saw.
- Excavation/Trenching. A distance of 25 feet in all directions will be cleared. The cleared area will be sufficient to accommodate movement of necessary equipment and the stockpiling of spoils piles.

All personnel should be alert to prevent unauthorized, accidental entrance into controlled-access areas (the EZ and CRZ). If such an entry should occur, the trespasser should be immediately escorted outside the area, or all HAZWOPER-related work must cease. All personnel, equipment, and supplies that enter controlled-access areas must be decontaminated or containerized as waste prior to leaving (through the CRZ only).

#### **8.2.2** Contamination Reduction Zone

The Contamination Reduction Zone is the transition area between the contaminated area and the clean area. Decontamination is the main focus in this area. The decontamination of workers and equipment limits the physical transfer of hazardous substances into the clean area. This area must also be clearly marked with hazard tape and access limited to personnel involved in decontamination. Decontamination procedures are further explained in Section 7.3.

## 8.2.3 Support Zone

The Support Zone is an uncontaminated zone where administrative and other support functions, such as first aid, equipment supply, emergency information, etc., are located. The Support Zone shall have minimal potential for significant exposure to contaminants (i.e., background levels).

Employees will establish a Support Zone (if necessary) at the site before the commencement of site activities. The Support Zone would also serve as the entry point for controlling site access.

#### 8.3 SITE ACCESS DOCUMENTATION

If implemented by the PM, all personnel entering the site shall complete the "Site Entry/Exit Log" located at the site trailer or primary site support vehicle.

#### 8.3.1 Visitor Access

Visitors to any HAZWOPER controlled-work area must comply with the health and safety requirements of this HASP, and demonstrate an acceptable need for entry into the work area. All visitors desiring to enter any controlled work area must observe the following procedures:

- 1. A written confirmation must be received by AECOM documenting that each of the visitors has received the proper training and medical monitoring required by this HASP. Verbal confirmation can be considered acceptable provided such confirmation is made by an officer or other authorized representative of the visitor's organization.
- 2. Each visitor will be briefed on the hazards associated with the site activities being performed and acknowledge receipt of this briefing by signing the appropriate tailgate safety briefing form.
- 3. All visitors must be escorted by an AECOM employee.

If the site visitor requires entry to any EZ, but does not comply with the above requirements, all work activities within the EZ must be suspended. Until these requirements have been met, entry will not be permitted.

## 8.4 SITE SECURITY

Site security is necessary to:

- Prevent the exposure of unauthorized, unprotected people to site hazards.
- Avoid the increased hazards from vandals or persons seeking to abandon other wastes on the site.
- Prevent theft.
- Avoid interference with safe working procedures.

To maintain site security during working hours:

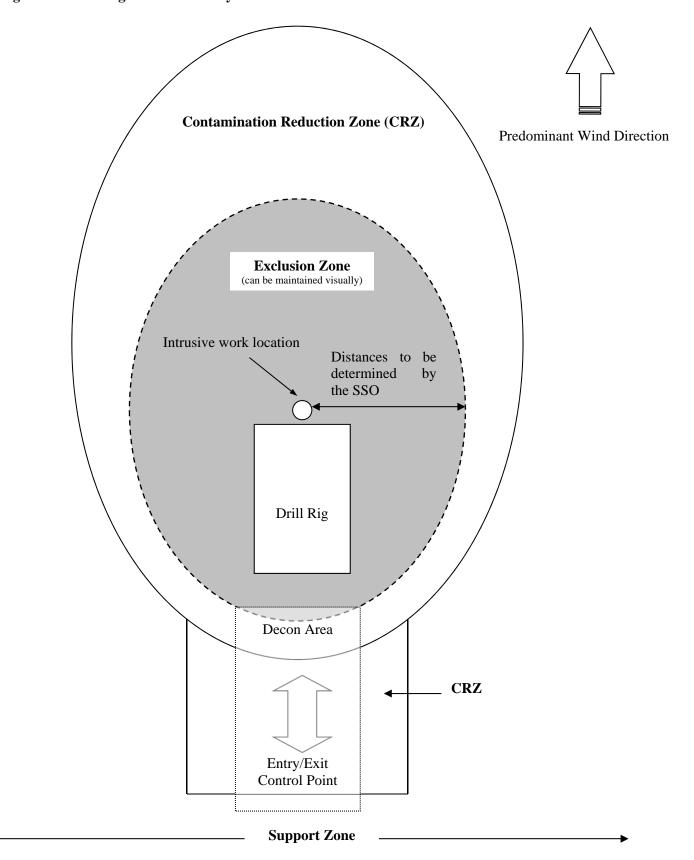
- 1. Maintain security in the Support Zone and at access control points.
- 2. Establish an identification system to identify authorized persons and limitations to their approved activities.
- 3. Assign responsibility for enforcing authority for entry and exit requirements.

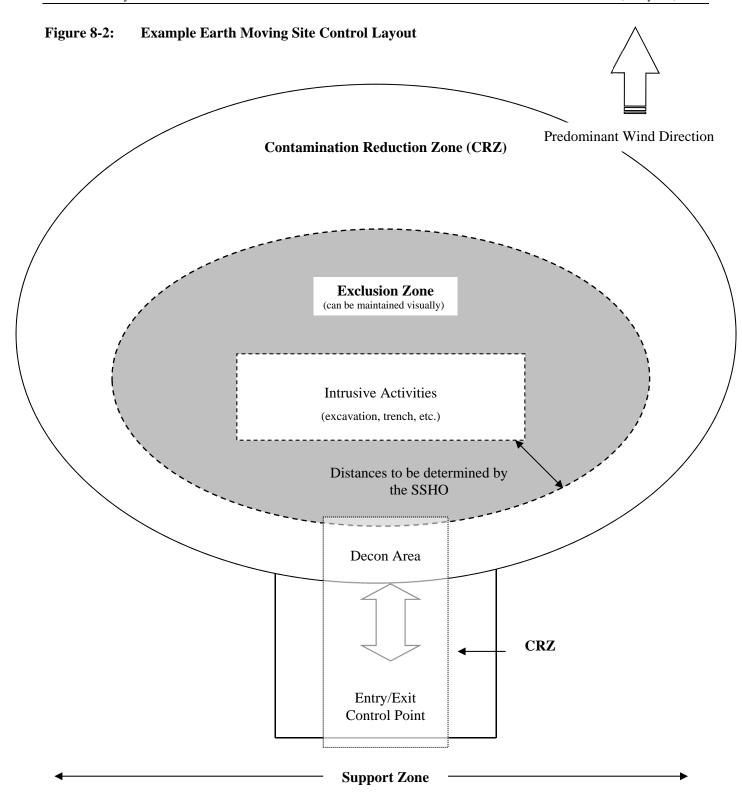
- 4. When feasible, install fencing or other physical barrier around the site.
- 5. If the site is not fenced, post signs around the perimeter and whenever possible, use guards to patrol the perimeter. Guards must be fully apprised of the hazards involved and trained in emergency procedures.
- 6. Have the PM approve all visitors to the site. Make sure they have valid purpose for entering the site. Have trained site personnel accompany visitors at all times and provide them with the appropriate protective equipment.

#### To maintain site security during off-duty hours:

- 1. If possible, assign trained, in-house technicians for site surveillance. They will be familiar with the site, the nature of the work, the site's hazards, and respiratory protection techniques.
- 2. If necessary, use security guards to patrol the site boundary. Such personnel may be less expensive than trained technicians, but will be more difficult to train in safety procedures and will be less confident in reacting to problems around hazardous substances.
- 3. Enlist public enforcement agencies, such as the local police department, if the site presents a significant risk to local health and safety.
- 4. Secure the equipment.

**Figure 8-1: Drilling Site Control Layout** 





#### 9.0 EMERGENCY RESPONSE PLANNING

#### 9.1 EMERGENCY ACTION PLAN

Although the potential for an emergency to occur is remote, an emergency action plan has been prepared in accordance with S3NA-603-PR Emergency Response Planning, Field for this project should such critical situations arise. The only significant type of onsite emergency that may occur is physical injury or illness to a member of the AECOM team. The Emergency Action Plan (EAP) will be reviewed by all personnel prior to the start of field activities. A test of the EAP will be performed within the first three (3) days of the project field operations. This test will be evaluated and documented in the project records.

Three major categories of emergencies could occur during site operations:

- 1. Illnesses and physical injuries (including injury-causing chemical exposure)
- 2. Catastrophic events (fire, explosion, earthquake, or chemical)
- 3. Safety equipment problems

#### 9.1.1 Emergency Coordinator

The duties of the Emergency Coordinator (EC) include:

- Implement the EAP based on the identified emergency condition
- Notify the appropriate project and SH&E Department personnel of the emergency (Table 9-3)
- Verify emergency evacuation routes and muster points are accessible
- Conduct routine EAP drills and evaluate compliance with the EAP

## 9.1.2 Site-Specific Emergency Procedures

Prior to the start of site operations, the EC will complete Table 9-1 with any site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures.

**Table 9-1: Emergency Planning** 

| _   | Response Procedures   |   |  |  |
|---|---|---|--|--|
| Emergency   | Communications  | Mitigation/Control  | Evacuation   |  |
| Medical Emergency                                     | If life-threatening, <b>contact 911</b> immediately and notify site supervisor.   | If qualified, perform First Aid-CPR. Keep victim calm and watch for symptoms of shock. Emergency response personnel will transport victims to hospital. | Do not move victim unless imminent threat (e.g., fire, explosion, chemical exposure, etc.) is present. |  |
| Chemical Exposure                                     | Report incident to site supervisor immediately.   | Refer to chemical safety card or SDS for appropriate treatment measures.  | Remove individual from danger area.  |  |
| Other Incident/Near Miss                              | Report incident to site supervisor immediately. Site supervisor will contact safety department.                               | For non-life threatening injuries or illness, transport victim to the hospital listed in Figure 9-1.  | None anticipated   |  |
| Severe Weather  | Site supervisor will notify personnel via radio when severe weather is approaching or use the following signal:               | Allow sufficient time for decontamination and shut down of operations.  | If severe weather is imminent, evacuate to the following shelter(s):                                   |  |
| Tornado   | Site supervisor will notify personnel via radio if severe weather may result in tornado activity or use the following signal: | Allow sufficient time for decontamination and shut down of operations.  | Tornado shelter location(s):   |  |
| Small Fire*  *Less than the size of a small trash can | Notify site supervisor to contact 911 immediately.  Notify all personnel evacuate or use the following signal:                | Determine if fire can be safely contained with a fire extinguisher.   | See evacuation route map(s). Exit facility and muster at the following location(s):                    |  |
| Large Fire/Explosion                                  | Notify site supervisor to contact 911 immediately.  Notify all personnel to evacuate or use the following signal:             | None anticipated. Evacuate immediately.   | See evacuation route map(s). Exit facility and muster at the following location(s):                    |  |
| Spills/Release  | Notify site supervisor. Site supervisor will contact OSC and determine if additional agencies must be notified.               | Don Level B PPE (see HASP). Complete THA. Use spill kit and diking procedures to contain spill.   | See evacuation route map(s). Exit facility and move upwind at least 1000 feet.                         |  |
| Security Threat                                       | Notify site supervisor. Contact 911.  | Keep vehicles locked and valuables out of sight.  | None anticipated.  |  |
| <b>Confined Space Emergency</b>                       | See Permit.   | See Permit.   | See Permit.  |  |

#### 9.1.3 Spill Containment Procedure

Work activities may involve the use of hazardous materials (i.e. fuels, solvents) or work involving drums or other containers. Where these activities exist, a site-specific Spill Reporting Card will be developed (Attachment D). Procedures in S3NA-520-PR Spill Response, Incidental as well as those outlined below will be used to prevent or contain spills:

- All hazardous material will be stored in appropriate containers
- Tops/lids will be placed back on containers after use.
- Containers of hazardous materials will be stored appropriately away from moving equipment.

At least one spill response kit, to include an appropriate empty container, materials to allow for booming or diking the area to minimize the size of the spill, and appropriate clean-up material (i.e. speedy dri) shall be available at each work site (more as needed).

- All hazardous commodities in use (i.e. fuels) shall be properly labeled.
- Containers shall only be lifted using equipment specifically manufactured for that purpose.
- Drums/containers will be secured and handled in a manner which minimizes spillage and reduces the risk of musculoskeletal injuries.

#### 9.1.4 Safety Accident/Incident Reporting

All accidents and incidents that occur on-site during any field activity will be promptly reported to the SSO and the immediate supervisor in accordance with S3NA-004-PR Incident Reporting.

If any AECOM employee is injured and requires medical treatment, the Site Supervisor will contact the **District Safety Manager**, **AECOM's Incident Reporting Line at (800) 348-5046**, and the applicable Account **Manager immediately**. The Site Supervisor will initiate IndustrySafe on the AECOM Intranet Safety Site or a written report, using the *Supervisor's Report of Incident* form (see S3NA-004-PR). The Site Supervisor will support the PM in the completion of <u>IndustrySafe</u> or the Supervisor's Report of Incident. The incident number or report will then be provided to the Account SH&E Manager before the end of the following shift.

If any employee of a subcontractor is injured, documentation of the incident will be accomplished in accordance with the subcontractor's procedures; however, copies of all documentation (which at a minimum must include the OSHA Form 301 or equivalent) must be provided to the SSO within 24 hours after the accident has occurred.

All accidents/incidents will be investigated in accordance with in S3NA-603-PR Incident Investigation and Review. Copies of all subcontractor accident investigations, whether accomplished in accordance with their own procedures or S3NA-603-PR, will be provided to the SSO within five (5) days of the accident/incident.

#### 9.1.5 Environmental Spill/Release Reporting

All environmental spills or releases of hazardous materials (e.g., fuels, solvents, etc.), whether in excess of the Reportable Quantity or not, will be reported according to the sequence identified in the *Site-Specific Spill Reporting Card*. In determining whether a spill or release must be reported to a regulatory agency, the Site Supervisor will assess the quantity of the spill or release and evaluate the reporting criteria against the state-specific reporting requirements, your applicable regulatory permit, and/or client-specific reporting procedures. In order to support the Site Supervisor and expedite the decision to report to a state regulatory agency, a site-specific Spill Reporting Card will be developed (Attachment D). If reporting to a state or Federal regulatory agency is required, AECOM has 15 minutes from the time of the spill/release to officially report it.

Chemical-specific Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Reportable Quantities for the known chemicals onsite are shown in Table 9-2.

**Table 9-2: CERCLA Reportable Quantities** 

| Hazardous Substance   | Regulatory Synonyms    | Final RQ (lbs) |
|-----------------------|------------------------|----------------|
| Benzene               | N/A                    | 10             |
| Toluene               | N/A                    | 1,000          |
| Ethyl Benzene         | N/A                    | 1,000          |
| Xylene                | N/A                    | 100            |
| Mercury               | N/A                    | 1              |
| Lead                  | N/A                    | 10             |
| Arsenic               | N/A                    | 1              |
| Chromium              | N/A                    | 5,000          |
| Nickel                | N/A                    | 100            |
| Cadmium               | N/A                    | 10             |
| Selenium              | N/A                    | 100            |
| Trichloroethylene     | Trichloroethene, TCE   | 100            |
| Tetrachloroethylene   | Perchloroethylene, PCE | 100            |
| Carbon Tetrachloride  | N/A                    | 10             |
| Methyl Ethyl Ketone   | MEK                    | 5,000          |
| 1,1,1-Trichloroethane | TCA                    | 1,000          |

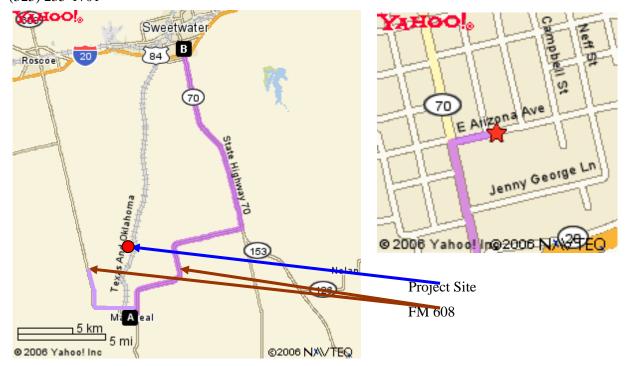
CERCLA RQ's can be found at: <a href="http://www.epa.gov/oem/docs/er/302table01.pdf">http://www.epa.gov/oem/docs/er/302table01.pdf</a>.

**Table 9-3: Emergency Contacts** 

| Emergency Coordinators / Key Personnel                                       |   |                             |                  |  |
|--|---|-----------------------------|------------------|--|
| <u>Name</u>  | Title/Workstation                                 | Telephone Number            | Mobile Phone     |  |
| Ross Haeberle  | Anadarko Petroleum Corporation<br>Project Manager | 936-446-8430                | 936-446-8430     |  |
| Kurt Webber  | Project Manager                                   | 972-735-7067                | 972-773-6921     |  |
| Kurt Webber  | Site Supervisor                                   | 972-735-7067                | 817-773-6921     |  |
| Kurt Webber  | Site Safety Officer                               | 972-735-7067                | 817-773-6921     |  |
| Dan Schillings   | District/Client Safety Manager                    | 210-253-7567                | 210-601-4129     |  |
| Nash Doyle   | Regional Safety Manager                           | 312-373-3813                | 312-593-8489     |  |
| <b>Incident Reporting</b>  | <b>Incident Reporting Line</b>                    | (800) 348-5046              |                  |  |
| Kurt Webber  | Emergency coordinator (EC)                        | 972-735-7067                | 972-773-6921     |  |
| Eric Olson   | DOT/IATA Shipping Expert                          | (864) 906-7309              | (864) 297-3102   |  |
|  | Organization /                                    | Agency                      |                  |  |
| Name   |   |                             | Telephone Number |  |
| Police Department (lo  | ocal)   |                             | 911              |  |
| Fire Department (loca  | ıl)   |                             | 911              |  |
| State Police   |   |                             | 911              |  |
| Ambulance Service (EMT will determine appropriate hospital for treatment)    |   |                             | 911              |  |
| Non-Emergency Clinic (Use by site personnel is only for non-emergency cases) |   |                             | 325-795-1888     |  |
| Trifilo, Richard D, MD   |   |                             |                  |  |
| 1888 Antilley Road   |   |                             |                  |  |
| Abilene, Texas 79  | 0606  |                             |                  |  |
| Emergency Clinic Ro  | ute: See Figure 9-1; Non-Emergency                | Clinic Route: See Figure 9- | 2                |  |
| WorkCare: 24-hr On-  | -Call Occupational Nurse (minor First A           | id assistance only)         | (800) 455-6155   |  |
| Poison Control Center  | r   |                             | (800) 222-1222   |  |
| Pollution Emergency  |   |                             | (800) 292-4706   |  |
| National Response Center   |   |                             | (800) 424-8802   |  |
| INFOTRAC (AECOM's account number 74984)                                      |   |                             | (800) 535-5053   |  |
| Tier II or SARA Title  | Tier II or SARA Title III Hot Line                |                             |                  |  |
|  | Public Util                                       | ities                       |                  |  |
| <u>Name</u>  |   |                             | Telephone Number |  |
| Common Ground Alli   | ance Nationwide                                   |                             | 811              |  |

Figure 9-1: Emergency Care Hospital Route/Detail Maps

Rolling Plains Memorial Hospital 200 East Arizona Street Sweetwater, Texas (325) 235-1701



#### **DRIVING DIRECTIONS**

- 1 Go to **FM-608** through Maryneal to **TX-70**
- 2. Turn Left on TX-70 go 10.6 mi
- 3. TX-70 becomes LAMAR ST[TX-70-BUS] go 0.2 mi
- 4. Turn Right on E ARIZONA AVE go 0.1 mi
- 5. Arrive at 200 E ARIZONA AVE, SWEETWATER, on the Right

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Figure 9-2: Occupational Clinic Route/Detail Maps

Trifilo, Richard D, MD 1888 Antilley Road Abilene, Texas 79606 (325) 795-1888



| DRIVIN  | IG DIRECTIONS          |          |  |  |  |
|---|------------------------|----------|--|--|--|
| 1101111 1 111 000                               | To: 4127 S Danville    |          |  |  |  |
| Maryneal, TX                                    | Abilene, TX 79605      |          |  |  |  |
| Start out going EAST on FM 608 toward RAILR     | OAD AVE.               | 10.30 mi |  |  |  |
| Turn LEFT onto TX-70.                           |                        | 10.53 mi |  |  |  |
| Turn RIGHT onto I-20 E/US-84 E.                 |                        | 0.13 mi  |  |  |  |
| Merge onto I-20 E/US-84 E via the ramp on the I | LEFT.                  | 33.82 mi |  |  |  |
| Merge onto I-20 BL E/US-80 E/US-84 E via EX     | IT 279 toward ABILENE. | 3.73 mi  |  |  |  |
| Merge onto US-83 S/US-84 E.                     |                        | 3.06 mi  |  |  |  |
| Take the exit toward FM 89/BUFFALO GAP RD       | ).                     | 0.23 mi  |  |  |  |
| Merge onto S CLACK ST.                          |                        | 0.92 mi  |  |  |  |
| Turn SLIGHT LEFT onto S DANVILLE DR.            |                        | 0.23 mi  |  |  |  |
| Estimated driving time: 64 .8 minutes 62.95mi   |                        |          |  |  |  |

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

# 10.0 PERSONNEL ACKNOWLEDGEMENT

By signing below, the undersigned acknowledges that he/she has read and reviewed the AECOM Health and Safety Plan for the Westlake Natural Gasoline Plant project in Maryneal, Texas. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein.

| PRINT NAME | SIGNATURE | ORGANIZATION | DATE     |
|------------|-----------|--------------|----------|
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              | <u> </u> |
|            |           |              |          |
|            |           |              |          |
|            |           |              | 1        |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            | <u> </u>  | ··········   | 3        |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |
|            |           |              |          |

# Attachment A Task Hazard Analyses



This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off

**CONTROLS** 

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE

3

Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- •Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- •Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- Psychosocial stress, violence

#### Hazard Classification

- •Considers the potential severity of the outcome
- •Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- •Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|  |   |          | Proje          | ct Number: 6033 | <br>5556                 | Client: Anadarko                           |                                |                    |  |
|--|---|----------|----------------|-----------------|--------------------------|--|--------------------------------|--------------------|--|
| AECOM  | Project Name: Westlake NGP Supervisor: Kurt Weber |          |                |                 | ct Manager: Kurt         |  | Location: Maryneal, Te         | exas               |  |
| ALCOM  | THA Developed By: Dan Schillings                  | 1 7 9    |                |                 |                          |  |                                | thru November 2015 |  |
| TASK HAZARD ANALYSIS   | Task Name: Bagging Contaminated V                 | Vaste    | from           | Scabb           | ling Activities          | Regularity of Tas                          | sk: One-time                   | Routine            |  |
|  | 77. 7   |          |                |                 | ssification              |  |                                |                    |  |
|  |   |          | <del>- `</del> | before d        | controls)                |  |                                |                    |  |
| Job Event Sequence   | Hazards   | ξį       | poor           | evel            |                          |  | Controls                       |                    |  |
| (List the major steps of the individual task)                                      | (List primary hazards)                            | Severity | Likelihood     | Risk Level      | Hazard<br>Classification | (List co                                   | ontrols that AECOM will implei | ment)              |  |
| 1 Tailgate Briefing  | None  | 1        | 1              | 1               | Low                      | Standard PPE ensemble; tra                 | 0                              |                    |  |
| 2 Identify debris staging location   | None  | 1        | 1              | 1               | Low                      | Standard PPE ensemble; tra                 | U- 1 1                         |                    |  |
| 3 Conduct pre-operation inspection for material removal                            | None  | 1        | 1              | 1               | Low                      | Standard PPE ensemble; tra                 | 0 1 1                          |                    |  |
| 4 Ensure required equipment/supplies are present                                   | None  | 1        | 1              | 1               | Low                      | Standard PPE ensemble; tra                 | nining, equipment              |                    |  |
| 5 Inspect and then don PPE   | None  | 1        | 1              | 1               | Low                      | Standard PPE ensemble; training, equipment |                                |                    |  |
| 6 Perform material removal activities  | Slips/trips/falls, bio haz, sharp edges           | 3        | 4              | 12              | Medium                   | Standard PPE ensemble; training, equipment |                                |                    |  |
| 7 Package (slowly), Doff PPE and IDW for disposal                                  | Sharp edges                                       | 3        | 4              | 12              | Medium                   | Standard PPE ensemble; tra                 |                                |                    |  |
| 8 Move to next bag or item or end of the day housekeeping                          | Manual lifting                                    | 2        | 3              | 6               | Medium                   | Standard PPE ensemble; training, equipment |                                |                    |  |
| 9  |   |          |                |                 |                          |  |                                |                    |  |
| 10   |   |          |                |                 |                          |  |                                |                    |  |
| 11   |   |          |                |                 |                          |  |                                |                    |  |
| 12   |   |          |                |                 |                          |  |                                |                    |  |
| 13   |   |          |                |                 |                          |  |                                |                    |  |
| 14   |   |          |                |                 |                          |  |                                |                    |  |
| 15   |   |          |                |                 |                          |  |                                |                    |  |
| 16   |   |          |                |                 |                          |  |                                |                    |  |
| 17   |   |          |                |                 |                          |  |                                |                    |  |
|  | Hazard Clas                                       | sifica   | ation          | Guide           | lines                    |  |                                |                    |  |
| Severity   |   | I        | ikelih         | ood of          | Occurrence               | На   | Hazard Classification Matrix   |                    |  |
|  |   |          |                |                 |                          |  |                                |                    |  |
| 1 Remote potential for injury, property damage/\$ loss, or env damage              |   |          | 1 \            | /ery unl        | ikely                    |  | Severity                       |                    |  |
| Potential for minor first aid injury, property damage/\$ loss, or environmental    | damage  |          | 2 (            | Jnlikely        |                          | 1 2  |                                | Risk Level         |  |
| 3 Potential for moderate personnel injuries, including medical treatment, prope    | ŭ   |          | 3 L            | ikely           |                          | po 2 4                                     |                                | Low                |  |
| negative public impact   | , daagory 1995, orivironmental damage, Of         |          | 4 \            | /ery like       | ely                      | B 2 4 6 8 10 Low Medium    S   1           |                                |                    |  |
|  |   |          | 5 (            | Certain         | -                        |  |                                | High               |  |
| 4 Potential for a serious injury, major property damage/\$ loss, serious impact to | o the environment, and public health              |          |                |                 |                          | 5 1  | 0 15 20 25                     |                    |  |
| 5 Catastrophic damage to people, property/equipment, environment, or public        | health  |          |                |                 |                          | Ri   | sk Level = Likelihood x S      | everity            |  |
|  |   |          |                |                 |                          |  |                                |                    |  |

|                          |  | Project Name: Westlake NGP Project Number: 60335556 |                                |                              |             | Client: Anadarko            |                               |                |  |  |
|--------------------------|--|---|--------------------------------|------------------------------|-------------|-----------------------------|-------------------------------|----------------|--|--|
| AEC                      | OM   | Supervisor: Kurt V                                  | Veber                          | Project Manager: Kurt Webber |             | Location: Maryneal, Texas   |                               |                |  |  |
|                          |  | THA Developed By                                    | y: Dan Schillings              |                              |             | Date: Novemb                | er 2014 thru Novembe          | er 2015        |  |  |
| SUMMAR                   | Y OF CONTROLS  | Task Name: Bag                                      | ging Contaminated Waste from S | cabbling Activities          | Reg         | gularity of Task:           | 🗔-time                        | <b>S</b> utine |  |  |
| Personal Protective Equ  | uipment (check all that apply)   | ▼_  |                                | Air Monitoring Gefer         | ence HASP m | onitoring plan)             |                               |                |  |  |
| CSA/ANSI Safety-To       | ed Boots (Leather or Rubber)   |   | No air monitoring required     |                              | Air         | monitoring requir           | ed ( <i>see procedures be</i> |                |  |  |
| CSA/ANSI Safety Gla      |  |   | Parameter                      | Location/Monitoring Interval | Response    | Action Levels               | Respo                         | nse Activity   |  |  |
| CSA/ANSI-approved        | Hard Hat   |   |                                |                              |             |                             |                               |                |  |  |
|                          | Reflective Traffic Safety Vest   |   |                                |                              |             |                             |                               |                |  |  |
| Leather Glover           |  |   |                                |                              |             |                             |                               |                |  |  |
| Hearing Protection (v    | vhere required)  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
| Required Training        | Fraining (associated with this THA)  Key SOPs (associated with this THA) |   |                                |                              |             | Client & Other Requirements |                               |                |  |  |
| 1 Tool specific training | 1 Tool specific training   |   | nd and Power Tools             |                              | Safe        | land Training               |                               |                |  |  |
| 2 Equipment specific     |  | S3NA-411-PR Ma                                      |                                |                              |             |                             |                               |                |  |  |
| 3 Hazardous noise        |  | S3NA-308-PR Ma                                      |                                |                              |             |                             |                               |                |  |  |
| 4                        |  |   | bile or Heavy Equipment        |                              |             |                             |                               |                |  |  |
| 5                        |  |   | <u></u>                        |                              |             |                             |                               |                |  |  |
| 6                        |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   | Acknowled                      | gement / Signatures          |             |                             |                               |                |  |  |
| Project Manager / Superv | isor (signature):  |   |                                | Date:                        |             |                             |                               |                |  |  |
| Name                     | Signature  | Company   | Date                           | Name                         |             | Signature                   | Company                       | Date           |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |
|                          |  |   |                                |                              |             |                             |                               |                |  |  |

|                                  |         | Project Name: Westlake NGP   | Project Number: 60335      | 5556  |  | Client: An   | nadarko           |  |  |
|----------------------------------|---------|--|----------------------------|---|--|--------------|-------------------|--|--|
| A=COM                            |         | Supervisor: Kurt Weber   | Project Manager: Kurt      | Webber  |  | Location: I  | Maryneal, Texas   |  |  |
|                                  |         | THA Developed By: Dan Schillings   | -                          |   | Date: November 2014 thru November 2015 |              |                   |  |  |
| EMERGENCY RESPONSE PLA           | ٨N      | Task Name: Bagging Contaminated Waste from Scab  | obling Activities          |   | Regularity of Task: Or                 | e-time       | Routine           |  |  |
|                                  |         | Ch   | eck-in Procedures          |   |  |              |                   |  |  |
| Check-in Times                   |         | Check-in Person  |                            | Phone I                                       | Number                                 |              | Cell Phone Number |  |  |
| 8:00 am & 5:00 pm                |         | Weber  |                            | (903) 52                                      | 20-4408                                |              | (903) 283-1446    |  |  |
| Alterna                          | e:      |  |                            |   |  |              |                   |  |  |
|                                  |         | Emergency C  | Coordinators / Key Perso   | onnel   |  |              |                   |  |  |
| Name                             |         | Title  | I                          | Phone I                                       | Number                                 |              | Cell Phone Number |  |  |
| Kurt Webber                      | Trair   | ning in First Aid / CPR  |                            | (903) 52                                      | 20-4408                                |              | (903) 283-1446    |  |  |
| Kurt Webber                      |         | ect Manager  |                            | (972) 73                                      |  |              | (972) 310-3729    |  |  |
| Kurt Webber                      |         | Supervisor/Site Safety Officer   |                            | (972) 73                                      |  |              | (972) 310-3729    |  |  |
| Dan Schillings                   |         | ount SH&E Manager  |                            | <u>, , , , , , , , , , , , , , , , , , , </u> | 53-7567                                |              | (210) 601-4129    |  |  |
|                                  |         | ent Reporting Line (BY THE END OF THE SHIFT)   |                            |   | 48.5046                                |              | ()                |  |  |
| Ross Haeberle                    |         | darko Petroleum Corporation Project Manager  |                            | (936) 446-8430                                |  |              | (936) 446-8430    |  |  |
| Eric Olson                       | DOT     | /IATA Shipping Expert  |                            | (864) 29                                      | 97-3102                                |              | (864) 918-2302    |  |  |
|                                  |         |  |                            |   |  |              |                   |  |  |
|                                  |         | Emergency  | / Agencies / Public Utilit | ies   |  |              |                   |  |  |
| Name                             |         | Туре   |                            | Det   | ails                                   |              | Phone Number      |  |  |
| Maryneal, TX                     | Polic   | DE CONTRACTOR OF THE CONTRACTO |                            |   |  | 911          |                   |  |  |
| Maryneal, TX                     | Fire    |  |                            |   |  | 911          |                   |  |  |
| Maryneal, TX                     |         | ulance   |                            |   |  | 911          |                   |  |  |
| Rolling Plains Memorial Hospital |         | rest Hospital / Clinic   | 200 East Arizona Stree     | t, Swee                                       | twater, Texas                          | (325) 235-   |                   |  |  |
| Emergicare                       |         | upational Medical Facility   | See Below                  |   |  | (325) 795-   |                   |  |  |
|                                  |         | on Control Center  |                            |   |  | 800.222.1    |                   |  |  |
|                                  |         | ution / Environmental  |                            |   |  | 800.292.4    |                   |  |  |
| <b>~</b>                         |         | onal Response Center   |                            |   |  | 800-424-8    |                   |  |  |
|                                  |         | OTRAC (AECOM"s Account Number: 74984)  |                            |   |  | 800-535-5    |                   |  |  |
|                                  |         | II or SARA Title III Hot Line  |                            |   |  | 800-424-9    | 346               |  |  |
| ₩                                | Com     | mon Ground Alliance Nationwide (CALL B 4 U Dig)  |                            |   |  | 811          |                   |  |  |
| Fmerge                           | ency Fo | uipment & Supplies   |                            |   | Other Emerge                           | ency Plan De | etails            |  |  |
| First Aid Kit - Type:            | oj Et   | Eye Wash   | Trifilo, Richard D, MD     |   | Other Emerge                           | oj i luli be |                   |  |  |
| Blankets / Survival:             |         | Spill Kit  | 1888 Antilley Road         |   |  |              |                   |  |  |
| Fire Extinguishers Type:         |         | Other:   | Abilene, Texas 79606       |   |  |              |                   |  |  |
| Communication Device             |         |  | (325) 795-1888             |   |  |              |                   |  |  |
| Vehicle Safety Equipment         |         |  |                            |   |  |              |                   |  |  |



This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off

**CONTROLS** 

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE

3

Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- •Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- •Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- Psychosocial stress, violence

#### Hazard Classification

- •Considers the potential severity of the outcome
- •Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- •Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|  |                                      |          | Proje      | ct Number: 6033 | 5556 Client: Anadarko    |   |  |  |  |
|--|--------------------------------------|----------|------------|-----------------|--------------------------|---|--|--|--|
| AECOM  | Supervisor: Kurt Weber               |          |            | Proje           | ct Manager: Kurt         | Webber Location: Maryneal, Texas  |  |  |  |
| ALCOM  | THA Developed By: Dan Schillings     |          |            |                 |                          | Date: November 2014 thru November 2015                                      |  |  |  |
| TASK HAZARD ANALYSIS   | Task Name: Clearing and Grubbing     |          |            |                 |                          | Regularity of Task: One-time $\square$ Routine                              |  |  |  |
|  |                                      |          |            |                 | nssification             |   |  |  |  |
|  |                                      |          | Ì          |                 | controls)                |   |  |  |  |
| Job Event Sequence   | Hazards                              | Ji.      | )00L       | -eve            |                          | Controls  |  |  |  |
| (List the major steps of the individual task)  | (List primary hazards)               | Severity | Likelihood | Risk Level      | Hazard<br>Classification | (List controls that AECOM will implement)                                   |  |  |  |
| 1 Inspect equipment  | None                                 | 1        | 1          | 1               | Low                      | Standard PPE ensemble; training   |  |  |  |
| 2 Go over equipment safety cards   | None                                 | 1        | 1          | 1               | Low                      | Standard PPE ensemble; training, equipment                                  |  |  |  |
| 3 Review work plan of area to be cleared   | None                                 | 1        | 1          | 1               | Low                      | Standard PPE ensemble; training, equipment                                  |  |  |  |
| 4 Put on PPE.  | None                                 | 2        | 2          | 4               | Low                      | For Chainsaw must have chainsaw chaps                                       |  |  |  |
| 5 Plan for where limbs and trees are going to fall (if cutting trees)  | Falling trees, chainsaw              | 2        | 2          | 4               | Low                      | Provide verbal warning before falling limbs or tree.                        |  |  |  |
| 6 Start saw and make cut   | Cuts, flying debris, noise           | 3        | 3          | 9               | Medium                   | Standard PPE ensemble; training, equipment                                  |  |  |  |
| 7 Shut off saw when finished   | Sharp edges                          | 2        | 2          | 4               | Low                      | Standard PPE ensemble; training, equipment                                  |  |  |  |
| 8 Put saw up.  | Manual lifting                       | 2        | 2          | 4               | Low                      | Standard PPE ensemble; training, equipment                                  |  |  |  |
| 9 Set up wood chipper if using   | Pinch points                         | 1        | 1          | 1               | Low                      | Ensure clothing is relatively tight, give verbal warnings, clear to 25 feet |  |  |  |
| 10 Inspect the wood chipper or brush hog   | Pinch points                         | 1        | 1          | 1               | Low                      | Standard PPE ensemble; training, equipment                                  |  |  |  |
| 11 Close all doors and access panels before starting unit.   | Flying debris, noise                 | 1        | 1          | 1               | Low                      | Standard PPE ensemble; training, equipment                                  |  |  |  |
| 12 Start unit and feed in the limbs. Beware open end of hog  | Noise, loose clothing                | 2        | 2          | 4               | Low                      | Standard PPE ensemble; training, equipment                                  |  |  |  |
| 13 Shut down chipper when finished.  | Slips/trips/falls, bio hzds          | 2        | 2          | 4               | Low                      | Ensure clothing is relatively tight, give verbal warnings, clear to 25 feet |  |  |  |
| 14 Move to new location and repeat steps as needed.  | Slips/trips/falls, bio hzds          | 2        | 2          | 4               | Low                      | Standard PPE ensemble; training   |  |  |  |
| 15   |                                      |          |            | 0               |                          |   |  |  |  |
| 16   |                                      |          |            | 0               |                          |   |  |  |  |
| 17   |                                      |          |            |                 |                          |   |  |  |  |
|  | Hazard Clas                          | sifica   | ation      | Guide           | lines                    |   |  |  |  |
| Severity   |                                      | I        | ikelih     | ood of          | Occurrence               | Hazard Classification Matrix  |  |  |  |
|  |                                      |          |            |                 |                          |   |  |  |  |
| 1 Remote potential for injury, property damage/\$ loss, or env damage  |                                      |          | 1 \        | /ery unl        | ikely                    | Severity  |  |  |  |
| Potential for minor first aid injury, property damage/\$ loss, or environmental of the control of the contr | damage                               |          |            | Jnlikely        | -                        | 1 2 3 4 5 Risk Level  |  |  |  |
| , , , , ,  |                                      |          |            | ikely           |                          | 2 4 6 8 10 Low  |  |  |  |
| 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or<br>negative public impact  |                                      |          |            | /ery like       | ely                      | 2 4 6 8 10 Low Medium  3 6 9 12 15 Medium  1 4 8 12 16 20 High              |  |  |  |
|  |                                      |          |            | Certain         | ,                        | CORP.   |  |  |  |
| 4 Potential for a serious injury, major property damage/\$ loss, serious impact to   | o the environment, and public health |          |            | - 5. (411)      |                          | 5 10 15 20 25   |  |  |  |
| 5 Catastrophic damage to people, property/equipment, environment, or public  | health                               |          |            |                 |                          | Risk Level = Likelihood x Severity  |  |  |  |
|  |                                      |          |            |                 |                          |   |  |  |  |

|  | Project Name: We  | Name: Westlake NGP Project Number: 60335556 |                              |     |                             | Client: Anadarko           |               |          |  |  |  |  |
|--|---|---|------------------------------|-----|-----------------------------|----------------------------|---------------|----------|--|--|--|--|
| <b>AECOM</b>   | Supervisor: Kurt V  |   | Project Manager: Kurt Webber |     | Location: Maryneal, Texas   |                            |               |          |  |  |  |  |
| A_COM  | THA Developed B   |   | ,                            |     | <u>`</u>                    | er 2014 thru Novem         | per 2015      |          |  |  |  |  |
| SUMMARY OF CONTROLS                                  | Task Name: Clea   | •   |                              | R   | egularity of Task:          | One-time                   |               | <b>V</b> |  |  |  |  |
| Personal Protective Equipment (check all that apply) | Tuon Tuon Ores  |   | Air Monitoring (refer        |     | • •                         | 0.10 1.11.10               | 11041110      |          |  |  |  |  |
| CSA/ANSI Safety-Toed Boots (Leather or Rubber)       | ▽   | No air monitoring required                  | All Monitoring (relen        |     |                             | ed ( <i>see procedures</i> | below)        |          |  |  |  |  |
| CSA/ANSI Safety Glasses or Goggles                   |   | Parameter                                   | Location/Monitoring Interval |     | se/Action Levels            |                            | onse Activity |          |  |  |  |  |
| CSA/ANSI-approved Hard Hat                           |   |   |                              |     |                             | ·                          |               |          |  |  |  |  |
| CSA/ANSI Type II/III Reflective Traffic Safety Vest  | 1   |   |                              |     |                             |                            |               |          |  |  |  |  |
| Leather Glover                                       |   |   |                              |     |                             |                            |               |          |  |  |  |  |
| Hearing Protection (where required)                  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
| Required Training (associated with this THA)         | equired Training (associated with this THA) Key SOPs (associated with this THA) |   |                              |     | Client & Other Requirements |                            |               |          |  |  |  |  |
| 1 Tool specific training                             | S3NA-305-PR Hai   | nd and Power Tools                          |                              | Saf | eland Training              |                            |               |          |  |  |  |  |
| 2 Equipment specific                                 | S3NA-411-PR Ma  | chine Guarding                              |                              |     |                             |                            |               |          |  |  |  |  |
| 3 Hazardous noise                                    | S3NA-308-PR Ma  | nual Lifting, Field                         |                              |     |                             |                            |               |          |  |  |  |  |
| 4  | S3NA-309-PR Mo  | pile or Heavy Equipment                     |                              |     |                             |                            |               |          |  |  |  |  |
| 5  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
| 6  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   | Acknowled                                   | gement / Signatures          |     |                             |                            |               |          |  |  |  |  |
| Project Manager / Supervisor (signature):            |   |   | Date:                        |     |                             |                            |               |          |  |  |  |  |
| Name Signature                                       | Company   | Date  | Name                         |     | Signature                   | Company                    | Da            | te       |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |
|  |   |   |                              |     |                             |                            |               |          |  |  |  |  |

|                          | Project Name: Westlake NGP  | Project Number: 60335556                   | Client: Anadarko                       |  |  |  |  |  |
|--------------------------|---|--|--|--|--|--|--|--|
| <b>AECOM</b>             | Supervisor: Kurt Weber  | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |  |  |  |  |  |
| AECOM                    |   | Project Manager. Ruit Webber               | , , , , , , , , , , , , , , , , , , ,  |  |  |  |  |  |
|                          | THA Developed By: Dan Schillings  |  | Date: November 2014 thru November 2015 |  |  |  |  |  |
| EMERGENCY RESPONSE PLAN  | Task Name: Clearing and Grubbing  | Regularity of Task: One                    | e-time  Routine                        |  |  |  |  |  |
|                          | Ch  | neck-in Procedures                         |  |  |  |  |  |  |
| Check-in Times           | Check-in Person   | Phone Number                               | Cell Phone Number                      |  |  |  |  |  |
| 8:00 am & 5:00 pm        | Kurt Weber  | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |  |
| Alternate:               |   |  |  |  |  |  |  |  |
|                          | Emergency (   | Coordinators / Key Personnel               |  |  |  |  |  |  |
| Name                     | Title   | Phone Number                               | Cell Phone Number                      |  |  |  |  |  |
| Kurt Webber              | Training in First Aid / CPR   | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |  |
| Kurt Webber              | Project Manager   | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |  |
|                          | Site Supervisor/Site Safety Officer   | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |  |
| Dan Schillings           | Account SH&E Manager  | (210) 253-7567                             | (210) 601-4129                         |  |  |  |  |  |
|                          | Incident Reporting Line (BY THE END OF THE SHIFT)                           | 1.800.348.5046                             |  |  |  |  |  |  |
|                          | Anadarko Petroleum Corporation Project Manager                              | (936) 446-8430                             | (936) 446-8430                         |  |  |  |  |  |
| Eric Olson               | DOT/IATA Shipping Expert  | (864) 297-3102                             | (864) 918-2302                         |  |  |  |  |  |
|                          |   |  |  |  |  |  |  |  |
|                          | _   |  |  |  |  |  |  |  |
|                          |   | y Agencies / Public Utilities              |  |  |  |  |  |  |
| Name                     | Туре  | Details                                    | Phone Number                           |  |  |  |  |  |
|                          | Police  |  | 911                                    |  |  |  |  |  |
|                          | Fire  |  | 911                                    |  |  |  |  |  |
|                          | Ambulance   |  | 911                                    |  |  |  |  |  |
| ů .                      | Nearest Hospital / Clinic   | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |  |  |  |  |  |
|                          | Occupational Medical Facility   | See Below                                  | (325) 795-1888                         |  |  |  |  |  |
|                          | Poison Control Center   |  | 800.222.1222                           |  |  |  |  |  |
|                          | Pollution / Environmental   |  | 800.292.4706                           |  |  |  |  |  |
|                          | National Response Center  |  | 800-424-8802                           |  |  |  |  |  |
|                          | INFOTRAC (AECOM"s Account Number: 74984) Tier II or SARA Title III Hot Line |  | 800-535-5053                           |  |  |  |  |  |
|                          |   |  | 800-424-9346                           |  |  |  |  |  |
|                          | Common Ground Alliance Nationwide (CALL B 4 U Dig)                          |  | 811                                    |  |  |  |  |  |
| Emorgono                 | cy Equipment & Supplies   | Other Emerger                              | ncy Plan Details                       |  |  |  |  |  |
| First Aid Kit - Type:    | Eye Wash  | Trifilo, Richard D, MD                     | icy Fidii Detaiis                      |  |  |  |  |  |
| Blankets / Survival:     | Spill Kit   | 1888 Antilley Road                         |  |  |  |  |  |  |
| Fire Extinguishers Type: | Other:  | Abilene, Texas 79606                       |  |  |  |  |  |  |
| Communication Device     | Ouici.  | (325) 795-1888                             |  |  |  |  |  |  |
| Vehicle Safety Equipment |   | (323) 173-1000                             |  |  |  |  |  |  |



#### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off

**CONTROLS** 

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- •Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- •Psychosocial stress, violence

#### Hazard Classification

- •Considers the potential severity of the outcome
- Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|  | Project Name: Westlake NGP                  |          |                   | Proje   | ct Number: 6033          | 35556  | Client: Anadarko                       |           |         |   |
|--|---|----------|-------------------|---|--------------------------|--|--|-----------|---------|---|
| AECOM  | Supervisor: Kurt Weber                      |          |                   |   | ct Manager: Kurt         | t Webber   | Location: Maryneal, Texas              |           |         |   |
| 7120771  | THA Developed By: Dan Schillings            |          |                   |   |                          |  | Date: November 2014 thru November 2015 |           |         |   |
| TASK HAZARD ANALYSIS   | Task Name: Direct Push Drilling             |          |                   |   |                          | Regularity of Task   | :: One-time                            |           | Routine | > |
|  | Hazard Classification (before controls)     |          |                   |   |                          |  |  |           |         |   |
| Job Event Sequence (List the major steps of the individual task)   | Hazards<br>(List primary hazards)           | Severity | Likelihood        | Risk Level  | Hazard<br>Classification | (List con  |  |           |         |   |
| 1 Tail gate safety briefing,inspect equipment  | None  | 1        | 1                 | 1   | Low                      | Standard PPE ensemble; train   |  |           |         |   |
| 2 Inspection of equipment (Inspection checklist)   | Slips,trips,falls,cuts,lifting,pinch points | 1        | 1                 | 1   | Low                      | Standard PPE ensemble; train   |  | ment      |         |   |
| 3 Correct any identified deficiencies from inspection  | Pinch points, nicks                         | 2        | 2                 | 4   | Low                      | Standard PPE ensemble; train   | 0                                      |           |         |   |
| 4 Verify subsurface utility clearances were completed  | None  | 4        | 3                 | 12  | Medium                   | Standard PPE ensemble; train   |  |           |         |   |
| 5 Position rig over intended drilling/sampling location  | Slips,trips,falls,cuts,lifting,pinch points | 2        | 2                 | 4   | Low                      | Standard PPE ensemble; training, meters, equipment   |  |           |         |   |
| 6 Ensure that all push rods are racked   | Unsecure rods could fall                    | 2        | 3                 | 6   | Medium                   | Standard PPE ensemble; training, meters, equipment   |  |           |         |   |
| 7 Initiate direct push sampling or activities  | H2S, Oxygen, CO, LEL, PID                   | 3        | 4                 | 12  | Medium                   | Standard PPE ensemble; training, meters, equipment   |  |           |         |   |
| 8 Remove rods and rack them upon removal   | Slips,trips,falls,cuts,lifting,pinch points | 3        | 4                 | 12  | Medium                   | Standard PPE ensemble; training, meters, equipment   |  |           |         |   |
| 9 Decontaminate rods   | Splashing of contaminants                   | 2        | 3                 | 6   | Medium                   | Standard PPE ensemble; training, meters, equipment   |  |           |         |   |
| 10 Collect rinsate   | Splashing of contaminants                   | 2        | 2                 | 4   | Low                      | Standard PPE ensemble; training, meters, equipment   |  |           |         |   |
| 11 Wipe off rods and dispose of non-IDW trash  | Pinch points, nicks                         | 2        | 2                 | 4   | Low                      | Standard PPE ensemble; training, meters, equipment   |  |           |         |   |
| 12 Daily housekeeping around the site  | Slips,trips,falls,cuts,lifting              | 2        | 2                 | 4   | Low                      | Standard PPE ensemble  |  |           |         |   |
| 13   |   |          |                   |   |                          |  |  |           |         |   |
| 14   |   |          |                   |   |                          |  |  |           |         |   |
| 15   |   |          |                   |   |                          |  |  |           |         |   |
| 16   |   |          |                   |   |                          |  |  |           |         |   |
| 17   |   |          |                   |   |                          |  |  |           |         |   |
|  | Hazard Clas                                 | sifica   | ition (           | Guidel  | lines                    |  |  |           |         |   |
| Severity   |   | L        | _ikelih           | ood of  | Occurrence               | Haz  | ard Classification M                   | latrix    |         |   |
| <ol> <li>Remote potential for injury, property damage/\$ loss, or env damage</li> <li>Potential for minor first aid injury, property damage/\$ loss, or environmental damage</li> <li>Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact</li> <li>Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health</li> </ol> |   |          | 2 U<br>3 L<br>4 \ | /ery unl<br>Jnlikely<br>ikely<br>/ery like<br>Certain |                          | Severity  1 2 3 4 5 2 4 6 8 10 3 6 9 12 15 4 8 12 16 20 5 10 15 20 25  Risk Level  Low  Medium  High  Risk Level = Likelihood x Severity |  |           |         |   |
| 5 Catastrophic damage to people, property/equipment, environment, or public  | health                                      |          |                   |   |                          | Risi   | k Level = Likelihood                   | x Severit | у       |   |

|  |   |  |                            | T  |                  |  |   |             |                 | 1 |  |  |
|--|---|--|----------------------------|--|------------------|--|---|-------------|-----------------|---|--|--|
|  |   | Project Name: Wes  | stlake NGP                 | Project Number: 60335556                 |                  | Client: Anad   | Client: Anadarko  |             |                 |   |  |  |
| AEC  | OM                                      | Supervisor: Kurt V   | Location: Ma               | Location: Maryneal, Texas                |                  |  |   |             |                 |   |  |  |
|  |   | THA Developed By   | y: Dan Schillings          |  |                  | Date: Novem  | nber 2014 thru No   | vember 2    | 015             |   |  |  |
| SUMMARY                                    | OF CONTROLS                             | Task Name: Direc   | ct Push Drilling           |  | Reg              | ularity of Task  | : One-time  |             | Routine         | ✓ |  |  |
| Personal Protective Equi                   | ipment (check all that apply)           |  |                            | Air Monitoring (reference                | e HASP m         | onitoring plan)  |   |             |                 |   |  |  |
|  | ed Boots (Leather or Rubber)            | >  | No air monitoring required |  |                  |  |   |             |                 |   |  |  |
| CSA/ANSI Safety Gla                        |   |  | Parameter                  | Location/Monitoring Interval R           | Response/        | Action Levels  |   |             | e Activity      |   |  |  |
| CSA/ANSI-approved I                        | Hard Hat Reflective Traffic Safety Vest |  | VOCs by PID                | BZ, 30 min                               | < 1              | 0 ppm  | Continue work and rathis acceptable range<br>potential for contribu   | , contact t | he SSO to inves |   |  |  |
| Leather Gloves/Nitrile  Hearing Protection | Sampling Gloves                         |  | Oxygen                     | BZ, 30 min                               | > 19.5 a         | and 23.5 <   | Continue work and rather this acceptable range potential for contribution   | , contact t | he SSO to inves |   |  |  |
| Fall Protection(if great                   | ter than 6' above ground surface)       | LEL  |                            | BZ, 30 min                               | <                | 10%  | Continue work and monitoring. If significant changes exist in this acceptable range, contact the SSO to investigate the potential for contributing factors. |             |                 |   |  |  |
|  |   |  | H2S                        | BZ, 30 min                               | < 1              | Continue work and monitoring. If significant changes this acceptable range, contact the SSO to investigate the potential for contributing factors. |   |             |                 |   |  |  |
| Required Training                          | (associated with this THA)              |  | Key SOPs (associat         |  | Client & Other I | Requiren   | nents   |             |                 |   |  |  |
| 1 Tool specific training                   |   | S3NA-307-PR Housekeeping, Worksite S3NA-417-PR Utilities, Underground Safeland |                            |  |                  |  | competent rig oper  | ator        |                 |   |  |  |
| 2 Equipment specific tra                   | aining                                  | S3NA-308-PR Mar  | nual Lifting, Field        | S3NA-508-PR Hazardous Materials Handling | g ar             |  |   |             |                 |   |  |  |
| 3 Biological Hazards                       | -                                       | S3NA-309-PR Mob  | pile or Heavy Equipment    | S3NA-517-PR Radiation, Non-Ionizing      |                  |  |   |             |                 |   |  |  |
| 4  |   | S3NA-405-PR Drill  | ing and Boring             | S3NA-520-PR Spill Response, Incidental   |                  |  |   |             |                 |   |  |  |
| 5  |   | S3NA-406-PR Elec   | ctrical Lines, Overhead    |  |                  |  |   |             |                 |   |  |  |
| 6  |   | S3NA-414-PR Rail   | way Sites                  |  |                  |  |   |             |                 |   |  |  |
|  |   |  | Acknowled                  | lgement / Signatures                     | •                |  |   |             |                 |   |  |  |
| Project Manager / Supervi                  | sor (signature):                        |  |                            | Date:                                    |                  |  |   |             |                 |   |  |  |
| Name                                       | Signature                               | Company  | Date                       | Name                                     |                  | Signature  | Compan  | у           | Dat             | е |  |  |
|  |   |  |                            |  |                  |  |   |             |                 |   |  |  |
|  |   |  |                            |  |                  |  |   |             |                 |   |  |  |
|  |   |  |                            |  |                  |  |   |             |                 |   |  |  |
|  |   |  |                            |  |                  |  |   |             |                 |   |  |  |
|  |   |  |                            |  |                  |  |   |             |                 |   |  |  |
|  |   |  |                            |  |                  |  |   |             |                 |   |  |  |
|  |   |  |                            |  |                  |  |   |             |                 |   |  |  |
|  |   |  |                            |  |                  |  |   |             |                 |   |  |  |
|  |   |  |                            |  |                  |  |   |             |                 |   |  |  |

|                            | Project Name: Westlake NGP                         | Project Number: 60335556                   | Client: Anadarko                       |  |  |  |  |
|----------------------------|--|--|--|--|--|--|--|
| A=COM                      | Supervisor: Kurt Weber                             | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |  |  |  |  |
|                            | THA Developed By: Dan Schillings                   |  | Date: November 2014 thru November 2015 |  |  |  |  |
| EMERGENCY RESPONSE PLAN    | Task Name: Direct Push Drilling                    | Regularity of Task: One                    | e-time  Routine                        |  |  |  |  |
|                            | Ch   | neck-in Procedures                         |  |  |  |  |  |
| Check-in Times             | Check-in Person                                    | Phone Number                               | Cell Phone Number                      |  |  |  |  |
| 8:00 am & 5:00 pm          | Kurt Weber   | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
| Alternate:                 |  | ( 11/1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1   | (11)                                   |  |  |  |  |
|                            | Emergency (  | Coordinators / Key Personnel               |  |  |  |  |  |
| Name                       | Title  | Phone Number                               | Cell Phone Number                      |  |  |  |  |
|                            | Training in First Aid / CPR                        | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
|                            | Project Manager                                    | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
| Kurt Webber                | Site Supervisor/Site Safety Officer                | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
|                            | Account SH&E Manager                               | (210) 253-7567                             | (210) 601-4129                         |  |  |  |  |
|                            | Incident Reporting Line (BY THE END OF THE SHIFT)  | 1.800.348.5046                             |  |  |  |  |  |
| Ross Haeberle              | Anadarko Petroleum Corporation Project Manager     | (936) 446-8430                             | (936) 446-8430                         |  |  |  |  |
| Eric Olson                 | DOT/IATA Shipping Expert                           | (864) 297-3102                             | (864) 918-2302                         |  |  |  |  |
|                            |  |  |  |  |  |  |  |
|                            |  |  |  |  |  |  |  |
|                            | Emergence  | y Agencies / Public Utilities              |  |  |  |  |  |
| Name                       | Туре   | Details                                    | Phone Number                           |  |  |  |  |
|                            | Police   |  | 911                                    |  |  |  |  |
|                            | Fire   |  | 911                                    |  |  |  |  |
|                            | Ambulance  |  | 911                                    |  |  |  |  |
|                            | Nearest Hospital / Clinic                          | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |  |  |  |  |
|                            | Occupational Medical Facility                      | See Below                                  | (325) 795-1888                         |  |  |  |  |
|                            | Poison Control Center                              |  | 800.222.1222                           |  |  |  |  |
|                            | Pollution / Environmental                          |  | 800.292.4706                           |  |  |  |  |
|                            | National Response Center                           |  | 800-424-8802                           |  |  |  |  |
|                            | INFOTRAC (AECOM"s Account Number: 74984)           |  | 800-535-5053                           |  |  |  |  |
|                            | Tier II or SARA Title III Hot Line                 |  | 800-424-9346                           |  |  |  |  |
|                            | Common Ground Alliance Nationwide (CALL B 4 U Dig) |  | 811                                    |  |  |  |  |
|                            |  |  |  |  |  |  |  |
|                            | cy Equipment & Supplies                            | ·  | ncy Plan Details                       |  |  |  |  |
| First Aid Kit - Type:      | Eye Wash   | Trifilo, Richard D, MD                     |  |  |  |  |  |
| ☐ Blankets / Survival:     | □ Spill Kit  | 1888 Antilley Road                         |  |  |  |  |  |
| Fire Extinguishers Type:   | Other:   | Abilene, Texas 79606                       |  |  |  |  |  |
| Communication Device       |  | (325) 795-1888                             |  |  |  |  |  |
| ✓ Vehicle Safety Equipment |  |  |  |  |  |  |  |



### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off

**CONTROLS** 

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- •Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- •Psychosocial stress, violence

### Hazard Classification

- •Considers the potential severity of the outcome
- Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|       |  | Project Name: Westlake NGP                  |          |                    | Proje      | ct Number: 6033            | 5556   | Client: Anadarko             |               |           |  |  |
|-------|--|---|----------|--------------------|------------|----------------------------|--|------------------------------|---------------|-----------|--|--|
|       | A=COM  | Supervisor: Kurt Weber                      |          |                    | Proje      | ct Manager: Kurt           | Webber   | Location: Maryneal,          | Гехаѕ         |           |  |  |
| 150   | 7120771  | THA Developed By: Dan Schillings            |          |                    |            |                            |  | Date: November 201           | 14 thru Nover | mber 2015 |  |  |
|       | TASK HAZARD ANALYSIS   | Task Name: Excavation/Trenching and Remov   | al of    | Surfac             | e Cor      | ntamination                | Regularity of Tas                                  | k: One-time                  | Rou           | tine 🔽    |  |  |
|       |  |   |          |                    |            | assification               |  |                              |               |           |  |  |
|       |  |   |          | (before controls)  |            |                            |  |                              |               |           |  |  |
|       | Job Event Sequence   | Hazards                                     | riit     | hood               | Leve       | Hazard                     |  | Controls                     |               |           |  |  |
|       | (List the major steps of the individual task)  | (List primary hazards)                      | Severity | Likelihood         | Risk Level | Classification             | (List a  |                              |               |           |  |  |
|       | onduct tailgate safety meeting.  | Slips, trips, and falls.                    | 1        | 2                  | 2          | Low                        | Standard PPE ensemble; tra                         |                              |               |           |  |  |
|       | erify locations/anomalies for excavation/removal   | Excavation collapse/cave in                 | 2        | 2                  | 4          | Low                        | Standard PPE ensemble; tra                         | 0                            |               |           |  |  |
| 3 Ve  | erify subsurface utility clearances  | None  | 1        | 2                  | 2          | Low                        | Standard PPE ensemble; tra                         | ining                        |               |           |  |  |
| 4 Co  | onduct pre-op inspection of equipment  | Slips,trips,falls,cuts,lifting,pinch points | 3        | 3                  | 9          | Medium                     | Standard PPE ensemble; tra                         | ining, equipment             |               |           |  |  |
| 5 Co  | orrect any deficiencies identified in the inspection   | Slips,trips,falls,cuts,lifting,pinch points | 3        | 3                  | 9          | Medium                     | Standard PPE ensemble; tra                         | ining, equipment             |               |           |  |  |
| 6 Ins | spect PPE  | 1   | 1        | 1                  | Low        | Standard PPE ensemble; tra | ining  |                              |               |           |  |  |
| 7 Do  | on appropriate PPE   | None  | 1        | 1                  | 1          | Low                        | Standard PPE ensemble; tra                         | ndard PPE ensemble; training |               |           |  |  |
| 8 Co  | ommence excavation or removal operations   | Slips,trips,falls, biological, noise, cuts  | 3        | 4                  | 12         | Medium                     | Standard PPE ensemble; tra                         | ining, meters, equipm        | ent           |           |  |  |
| 9 Es  | stablish spotter for excavation/removal operations   | Slips,trips,falls, biological, noise, cuts  | 3        | 4                  | 12         | Medium                     | Standard PPE ensemble; tra                         | ining, meters, equipm        | ent           |           |  |  |
| 10 Co | onduct air monitoring if not using wet methods   | Oxygen, Hydrocarbons, VOCs, LEL, PID        | 2        | 2                  | 4          | Low                        | Standard PPE ensemble; training, meters, equipment |                              |               |           |  |  |
|       | valuate air monitoring results/act accordingly   | Oxygen, Hydrocarbons, VOCs, LEL, PID        | 2        | 2                  | 4          | Low                        | Standard PPE ensemble; training, meters, equipment |                              |               |           |  |  |
|       | emove contaminated soil/stage for disposal   | Slips,trips,falls, biological, noise, cuts  | 2        | 2                  | 4          | Low                        | Standard PPE ensemble; training, equipment         |                              |               |           |  |  |
| 13 Pr | roperly stage for disposal all IDW, proper facility  | None  | 1        | 1                  | 1          | Low                        | Standard PPE ensemble; tra                         | ining                        |               |           |  |  |
| 14 OI | btain load tickets and bill of lading  | None  | 1        | 1                  | 1          | Low                        | Standard PPE ensemble; tra                         | ining                        |               |           |  |  |
| 15    |  |   |          |                    | 0          |                            |  |                              |               |           |  |  |
| 16    |  |   |          |                    | 0          |                            |  |                              |               |           |  |  |
| 17    |  |   |          |                    | 0          |                            |  |                              |               |           |  |  |
|       |  | Hazard C                                    | lassi    | ficatio            | n Gu       | idelines                   |  |                              |               |           |  |  |
|       | Severity   |   | L        | ikelih             | ood of     | f Occurrence               | H  | lazard Classification M      | atrix         |           |  |  |
|       |  |   |          |                    |            |                            |  | 94                           |               |           |  |  |
| 1     | Remote potential for injury, property damage/\$ loss, or env d   | omago                                       |          | 1 V                | ery unl    | likely                     |  | Severity                     |               |           |  |  |
|       | . , , , . , ,  | 9   |          |                    | nlikely    |                            | 1 2  | 3 4 5                        | Risk Le       | vel       |  |  |
|       | Potential for minor first aid injury, property damage/\$ loss, or environmental damage   |   |          |                    |            |                            | B 2 4  |                              | Low           |           |  |  |
|       | 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental dama<br>or negative public impact |   |          |                    |            | alv.                       | 7  | 9 12 15                      | Mediu         | m e       |  |  |
| 0.    | nogativo pasito impast   |   |          | ery like<br>ertain | ,          | <u>₹</u> 4 8               | 12 16 20   | High                         |               |           |  |  |
| 4     | 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health                              |   |          |                    |            |                            | 5 10 15 20 25                                      |                              |               |           |  |  |
| 5     | Catastrophic damage to people, property/equipment, environ   | ment, or public health                      |          |                    |            |                            | Risk Level = Likelihood x Severity                 |                              |               |           |  |  |

|                           |                                | Project Name: Wes                                | stlake NGP                      | Project Number: 60335556            |   | Client: Anadark  | 0  |                        |                    |   |  |
|---------------------------|--------------------------------|--|---------------------------------|-------------------------------------|---|--|--|------------------------|--------------------|---|--|
| AEC                       | <b>COM</b>                     | Supervisor: Kurt V                               | Veber                           | Project Manager: Kurt Webber        |   | Location: Maryn  | eal, Texas   |                        |                    |   |  |
|                           |                                | THA Developed By                                 | y: Dan Schillings               |                                     |   | Date: Novembe  | r 2014 thru Novembe                                  | er 201                 | 5                  |   |  |
| SUMMARY                   | OF CONTROLS                    | Task Name: Exca                                  | vation/Trenching and Removal of | Surface Contamination               | Re  | egularity of Task:   | One-time   | <b>V</b>               | Routine            |   |  |
| Personal Protective Equi  | ipment (check all that apply)  |  |                                 | Air Monitoring (refere              |   | monitoring plan)   |  |                        |                    |   |  |
|                           | ed Boots (Leather or Rubber)   |  | No air monitoring required      |                                     | <b>☑</b> Air  | Air monitoring required (see procedures below)   |  |                        |                    |   |  |
| CSA/ANSI Safety Gla       |                                |  | Parameter                       | Location/Monitoring Interval        | Respon  | se/Action Levels   | Res  | sponse                 | e Activity         |   |  |
| CSA/ANSI-approved I       | Hard Hat                       | VOCa by DID                                      |                                 | D7 20 min                           |   |  | Continue work and more<br>exist in this acceptable   | ,                      | 0 0                | U |  |
| CSA/ANSI Type II/III I    | Reflective Traffic Safety Vest |  | VOCs by PID                     | BZ, 30 MIII                         | BZ, 30 min < 10 ppm   |  |  |                        | ontributing factor |   |  |
| Leather Gloves            |                                |  | Oxygen                          | BZ, 30 min                          | 、10   |  | Continue work and mor                                | ,                      |                    | ~ |  |
| Hearing Protection (w     | here required)                 |  | Охуден                          | BZ, 30 IIIII                        | > 19  |  | exist in this acceptable<br>investigate the potentia | _                      |                    |   |  |
|                           |                                |  | 1.51                            | D7 20 min                           |   |  | Continue work and mor                                | ,                      | 0 0                | U |  |
|                           |                                |  | LEL                             | BZ, 30 min                          |   | < 10%  | exist in this acceptable<br>investigate the potentia |                        |                    |   |  |
|                           |                                |  |                                 |                                     | Upgrade to Level C, Implemen                                      |  |  | ement dust suppression |                    |   |  |
|                           |                                |  | Aerosols                        | BZ & EZ, 30 min                     | >05-10 r  | mg/m <sup>3</sup> or >5.0@EZ   | measures; contact the S                              | -                      |                    |   |  |
| Required Training         | (associated with this THA)     |  | Key SOPs (associate             | ed with this THA)                   |   | (  | lient & Other Requ                                   | ireme                  | nts                |   |  |
| 1 Field Safety            |                                | S3NA-303-PR Exc                                  | avation and Trenching           | •                                   | vide the OSHA Com   | •  |  |                        |                    |   |  |
| 2 General Excavation S    | afety                          | S3NA-309-PR Mol                                  | pile or Heavy Equipment         | S3NA-511-PR Heat Stress Prevention  |   | and provide proper documentation to AECOM prior to start of site work.  Daily inspection form to be completed by Competent Person as well. |  |                        |                    |   |  |
| 3 Trench/Excavation Sa    | nfety                          | S3NA-307-PR Hou                                  | usekeeping, Worksite            | S3NA-517-PR Radiation, Non-Ionizing |   | •  |  |                        |                    |   |  |
| 4 Hearing Protection      |                                | S3NA-312-PR Sta                                  | irways and Ladders              | S3NA-417-PR Utilities, Underground  | ——— Safeland required training and competent equipment operators. |  |  |                        |                    |   |  |
| 5 Biological Hazards      |                                | S3NA-406-PR Ele                                  | ctrical Lines, Overhead         |                                     |   |  |  |                        |                    |   |  |
| 6 First Aid/CPR           |                                | S3NA-417-PR Utili                                | ties, Underground               |                                     |   |  |  |                        |                    |   |  |
|                           |                                |  | Acknowled                       | gement / Signatures                 |   |  |  |                        |                    |   |  |
| Project Manager / Supervi | sor (signature):               |  |                                 | Date:                               |   |  |  |                        | •                  |   |  |
| Name                      | Signature                      | Company  | Date                            | Name                                |   | Signature  | Company  |                        | Date               | е |  |
|                           |                                |  |                                 |                                     |   |  |  |                        |                    |   |  |
|                           |                                |  |                                 |                                     |   |  |  |                        |                    |   |  |
|                           |                                |  |                                 |                                     |   |  |  |                        |                    |   |  |
|                           |                                |  |                                 |                                     |   |  |  |                        |                    |   |  |
|                           |                                | 1  |                                 |                                     |   |  |  |                        |                    |   |  |
|                           |                                | <del>                                     </del> |                                 |                                     |   |  |  |                        |                    |   |  |
|                           |                                |  |                                 |                                     |   |  |  |                        |                    |   |  |
|                           |                                |  |                                 |                                     |   |  |  |                        |                    |   |  |

| 4 - 00 4 4                       | Project Name: Westlake NGP                         | Project Number: 60335556      |                         | Client: Anadarko            |             |  |  |  |
|----------------------------------|--|-------------------------------|-------------------------|-----------------------------|-------------|--|--|--|
| <b>AECOM</b>                     | Supervisor: Kurt Weber                             | Project Manager: Kurt Webl    | ber                     | Location: Maryneal, Texas   |             |  |  |  |
|                                  | THA Developed By: Dan Schillings                   |                               |                         | Date: November 2014 thru No | vember 2015 |  |  |  |
| EMERGENCY RESPONSE PLAN          | Task Name: Excavation/Trenching and Removal of Su  | rface Contamination           | Regularity of Task: One | -time  Routine              | <b>V</b>    |  |  |  |
|                                  | Ch   | neck-in Procedures            | •                       |                             |             |  |  |  |
| Check-in Times                   | Check-in Person                                    | Phor                          | ne Number               | Cell Phone                  | e Number    |  |  |  |
| 8:00 am & 5:00 pm                | Kurt Weber   | (903)                         | ) 520-4408              | (903) 28                    | 3-1446      |  |  |  |
| Alternate:                       |  | ,                             | ,                       | , ,                         |             |  |  |  |
|                                  | Emergency (  | Coordinators / Key Personne   |                         |                             |             |  |  |  |
| Name                             | Title  | Phor                          | ne Number               | Cell Phone                  | e Number    |  |  |  |
| Kurt Webber                      | Training in First Aid / CPR                        | (903                          | ) 520-4408              | (903) 28                    | 3-1446      |  |  |  |
|                                  | Project Manager                                    |                               | 735-7067                | (972) 31                    |             |  |  |  |
| Kurt Webber                      | Site Supervisor/Site Safety Officer                |                               | 735-7067                | (972) 31                    | 0-3729      |  |  |  |
| Dan Schillings                   | Account SH&E Manager                               | (210                          | ) 253-7567              | (210) 60                    | 1-4129      |  |  |  |
|                                  | Incident Reporting Line (BY THE END OF THE SHIFT)  | 1.800                         | 0.348.5046              | 1                           |             |  |  |  |
| Ross Haeberle                    | Anadarko Petroleum Corporation Project Manager     | (936)                         | ) 446-8430              | (936) 446-8430              |             |  |  |  |
| Eric Olson                       | DOT/IATA Shipping Expert                           | (864)                         | ) 297-3102              | (864) 91                    | 8-2302      |  |  |  |
|                                  |  |                               |                         |                             |             |  |  |  |
|                                  |  |                               |                         |                             |             |  |  |  |
|                                  | Emergency  | y Agencies / Public Utilities |                         |                             |             |  |  |  |
| Name                             | Туре   | ]                             | Details                 | Phone N                     | lumber      |  |  |  |
| Maryneal, TX                     | Police   |                               |                         | 911                         |             |  |  |  |
| Maryneal, TX                     | Fire   |                               |                         | 911                         |             |  |  |  |
| Maryneal, TX                     | Ambulance  |                               |                         | 911                         |             |  |  |  |
| Rolling Plains Memorial Hospital | Nearest Hospital / Clinic                          | 200 East Arizona Street, Sw   | veetwater, Texas        | (325) 235-1701              |             |  |  |  |
| Emergicare                       | Occupational Medical Facility                      | See Below                     |                         | (325) 795-1888              |             |  |  |  |
|                                  | Poison Control Center                              |                               |                         | 800.222.1222                |             |  |  |  |
|                                  | Pollution / Environmental                          |                               |                         | 800.292.4706                |             |  |  |  |
|                                  | National Response Center                           |                               |                         | 800-424-8802                |             |  |  |  |
|                                  | INFOTRAC (AECOM"s Account Number: 74984)           |                               |                         | 800-535-5053                |             |  |  |  |
|                                  | Tier II or SARA Title III Hot Line                 |                               |                         | 800-424-9346                |             |  |  |  |
|                                  | Common Ground Alliance Nationwide (CALL B 4 U Dig) |                               |                         | 811                         |             |  |  |  |
| _                                |  |                               |                         |                             |             |  |  |  |
|                                  | cy Equipment & Supplies                            |                               | Other Emerger           | ncy Plan Details            |             |  |  |  |
| First Aid Kit - Type:            | Eye Wash   | Trifilo, Richard D, MD        |                         |                             |             |  |  |  |
| Blankets / Survival:             | Spill Kit  | 1888 Antilley Road            |                         |                             |             |  |  |  |
| Fire Extinguishers Type:         | Other:   | Abilene, Texas 79606          |                         |                             |             |  |  |  |
| Communication Device             | -  | (325) 795-1888                |                         |                             |             |  |  |  |
| ✓ Vehicle Safety Equipment       |  |                               |                         |                             |             |  |  |  |



### This THA (worksheets 1 & 2) must be completed for all field work. Required for all projects/sites which do not have an existing Emergency contacts Summarize • Identify hazards emergency response plan controls Emergency Classify hazards Acknowledgement procedures • Identify controls / Sign off • Emergency equipment **EMERGENCY HAZARDS CONTROLS RESPONSE** Hazard Identification • Natural (biological) – bacteria, viruses, insects, plants, birds, and animals • Chemical – exposure to chemical toxins, acute or chronic, by way of inhalation, ingestion or absorption • Physical – slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting

#### **Hazard Classification**

• Psychosocial - stress, violence

- •Considers the potential severity of the outcome
- •Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

•Elimination (first) – choose a different process; modify an existing process; substitute with less hazardous substance

• Environmental – extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality

- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|  |   | Project Name: Westlake NGP               |          |            | Proj       | ect Number: 6033   | 35556 Client: Anadarko  |  |  |  |
|--|---|--|----------|------------|------------|--|---|--|--|--|
|  | AECOM   | Supervisor: Kurt Weber                   |          |            | Proj       | ect Manager: Kurt  | t Webber Location: Maryneal, Texas  |  |  |  |
|  | 7120777   | THA Developed By: Dan Schillings         |          |            |            |  | Date: November 2014 thru November 2015  |  |  |  |
|  | TASK HAZARD ANALYSIS  | Task Name: Groundwater Monitoring and Sa | mplin    | g          |            |  | Regularity of Task: One-time $\square$ Routine $\triangledown$  |  |  |  |
|  |   |  | ı        |            |            | lassification  |   |  |  |  |
|  | Job Event Sequence (List the major steps of the individual task)  | Hazards<br>(List primary hazards)        | Severity | Likelihood | Risk Level | Hazard<br>Classification   | Controls (List controls that AECOM will implement)  |  |  |  |
| 1  | Tail gate safety briefing   | None                                     | 1        | 1          | 1          | Low  | Standard PPE ensemble; training   |  |  |  |
|  | Prepare sample containers   | Potential to break sample containers     | 2        | 1          | 2          | Low  | Standard PPE ensemble; training   |  |  |  |
| 3 Drive to well site (observe steps 4 thru Driving hazards                       |   |  |          |            |            | Low  | Standard PPE ensemble; training   |  |  |  |
| 4 Open well head and allow to ventilate for 15 minutes H2S, Oxygen, CO, LEL, PID |   |  |          |            |            | Medium   | Standard PPE ensemble; training, meters, equipment, training  |  |  |  |
| 5  | Measure/evaluate %LEL and VOCs at well head   | H2S, Oxygen, CO, LEL, PID                | 4        | 3          | 12         | Medium   | Standard PPE ensemble; training, meters, equipment, training  |  |  |  |
| 6  | Install temporary pump or peristaltic pump tubing   | H2S, Oxygen, CO, LEL, PID                | 4        | 3          | 12         | Medium   | Standard PPE ensemble; training, meters, equipment, training  |  |  |  |
| 7  | 7 Purge required volume of groundwater Slips/trips/falls, bio hzds  |  |          |            | 6          | Medium   | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 8  | Containerize purge water in 5 gallon bucket with lid  | Slips/trips/falls, bio hzds              | 3        | 3          | 9          | Medium   | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 9  | Collect groundwater samples   | Slips/trips/falls, bio hzds              | 2        | 2          | 4          | Low  | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 10   | Place samples in iced cooler for transportation to lab  | Slips/trips/falls, bio hzds              | 2        | 2          | 4          | Low  | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 11   | Complete documentation  | Slips/trips/falls, bio hzds              | 2        | 2          | 4          | Low  | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 12   | Remove temporary pump installation or tubing  | Slips/trips/falls, bio hzds              | 2        | 2          | 4          | Low  | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 13   | Decontaminate temporary pump  | Slips/trips/falls, bio hzds              | 2        | 2          | 4          | Low  | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 14   | Place lid securely on 5 gallon bucket of purge water  | Slips/trips/falls, bio hzds              | 2        | 2          | 4          | Low  | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 15   | Inspect drums for integrity prior to transferring purge water   | Slips/trips/falls, bio hzds              | 2        | 2          | 4          | Low  | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 16   | Move purge water to purge water drum residing atop a pallet   | Slips/trips/falls, bio hzds              | 3        | 3          | 9          | Medium   | Standard PPE ensemble; training, equipment, training  |  |  |  |
| 17   | Site housekeeping   | Slips/trips/falls, bio hzds              | 1        | 1          | 1          | Low  | Standard PPE ensemble   |  |  |  |
|  |   | Hazard Classifi                          | catio    | n Gui      | delir      | nes  |   |  |  |  |
|  | Severity  |  | _        |            |            | of Occurrence  | Hazard Classification Matrix  |  |  |  |
|  | <ol> <li>Remote potential for injury, property damage/\$ loss, or env damage</li> <li>Potential for minor first aid injury, property damage/\$ loss, or environmental damage</li> <li>Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact</li> </ol> |  |          |            |            | nlikely<br>ly<br>kely  | Severity  1 2 3 4 5  0 2 4 6 8 10  1 3 6 9 12 15  1 4 8 12 16 20  Severity  Risk Level  Low  Medium  High |  |  |  |
|  | 4 Potential for a serious injury, major property damage/\$ loss, serious impact   |  | 5 (      | Certaiı    | ı          | X     4     8     12     16     20       5     10     15     20     25 |   |  |  |  |
|  | 5 Catastrophic damage to people, property/equipment, environment, or public   | health                                   |          |            |            |  | Risk Level = Likelihood x Severity  |  |  |  |

| The sale of the sa | Project Name: Wes  | stlake NGP                     | Project Number: 60335556     |           | Client: Anada    | arko  |  |  |  |  |
|--|--------------------|--------------------------------|------------------------------|-----------|------------------|---|--|--|--|--|
| A=COM  | Supervisor: Kurt W | /eber                          | Project Manager: Kurt Webber |           | Location: Mar    | yneal, Texas  |  |  |  |  |
| ALCOM  | THA Developed By   | : Dan Schillings               |                              |           | Date: Novem      | ber 2014 thru Novembe   | er 2015  |  |  |  |
| SUMMARY OF CONTROLS  | Task Name: Grou    | ndwater Monitoring and Samplin | g                            | Regu      | ularity of Task: | One-time  | Routine  |  |  |  |
| Personal Protective Equipment (check all that apply)   |                    |                                | Air Monitoring (r            |           |                  |   |  |  |  |  |
| ▼ CSA/ANSI Safety-Toed Boots (Leather or Rubber)   |                    | No air monitoring required     |                              |           |                  | quired (see procedures below)   |  |  |  |  |
| CSA/ANSI Safety Glasses or Goggles   |                    | Parameter                      | Location/Monitoring Interval | Response/ | Action Levels    | R   | esponse Activity   |  |  |  |
| CSA/ANSI-approved Hard Hat   |                    | VOCa by DID                    | D7 20 min                    | . 10      |                  |   | ring. If significant changes exist in this   |  |  |  |
| CSA/ANSI Type II/III Reflective Traffic Safety Vest  |                    | VOCs by PID                    | BZ, 30 min                   | < 10      |                  | contributing factors.   | ne SSO to investigate the potential for  |  |  |  |
| Leather Gloves   |                    | Oxygen                         | BZ, 30 min                   | \ 10 5 a  | and 23.5 <       |   | ring. If significant changes exist in this ne SSO to investigate the potential for |  |  |  |
| Hearing Protection   |                    | Олуден                         | <i>BE</i> , 30 Hill          | > 17.5 d  | IIIu 25.5 \      | contributing factors.   | le 550 to investigate the potential for  |  |  |  |
| Nitrile Gloves for Sampling  |                    | LEL                            | BZ, 30 min                   | < 1       |                  |   | ring. If significant changes exist in this ne SSO to investigate the potential for |  |  |  |
|  |                    | H2S                            | BZ, 30 min                   | < 10      | ) ppm            | Continue work and monitoring. If significant changes exist in this acceptable range, contact the SSO to investigate the potential for contributing factors. |  |  |  |  |
| Required Training (associated with this THA)   |                    | Key SOPs (associat             | ed with this THA)            |           |                  | Client & Other Re   | equirements  |  |  |  |
| 1 Tool specific training   | S3NA-307-PR Hou    | sekeeping, Worksite            |                              | Safela    | and Training     |   |  |  |  |  |
| 2 Equipment Specific   | S3NA-308-PR Mar    | ual Lifting, Field             |                              |           |                  |   |  |  |  |  |
| 3 First Aid/CPR  | S3NA-405-PR Drill  | ing and Boring                 |                              |           |                  |   |  |  |  |  |
| 4  | S3NA-414-PR Rail   | way Sites                      |                              |           |                  |   |  |  |  |  |
| 5  | S3NA-417-PR Utili  | ties, Underground              |                              |           |                  |   |  |  |  |  |
| 6  |                    | Response, Incidental           |                              |           |                  |   |  |  |  |  |
|  | <u> </u>           | Ackno                          | wledgement / Signatures      | <u> </u>  |                  |   |  |  |  |  |
| Project Manager / Supervisor (signature):  |                    |                                | Date:                        |           |                  |   |  |  |  |  |
| Name Signature   | Company            | Date                           | Name                         |           | Signature        | Company   | Date   |  |  |  |
|  |                    |                                |                              |           |                  |   |  |  |  |  |
|  |                    |                                |                              |           |                  |   |  |  |  |  |
|  |                    |                                |                              |           |                  |   |  |  |  |  |
|  |                    |                                |                              |           |                  |   |  |  |  |  |
|  |                    |                                |                              |           |                  |   |  |  |  |  |
|  |                    |                                |                              |           |                  |   |  |  |  |  |
|  |                    |                                |                              |           |                  |   |  |  |  |  |
|  |                    |                                |                              |           |                  |   |  |  |  |  |

| 4                                | Project Name: Westlake NGP                         | Project Number: 60335556                   | Client: Anadarko                       |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|
| A=COM                            | Supervisor: Kurt Weber                             | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |  |  |  |  |
| 2120211                          | THA Developed By: Dan Schillings                   |  | Date: November 2014 thru November 2015 |  |  |  |  |
| EMERGENCY RESPONSE PLAN          | Task Name: Groundwater Monitoring and Sampling     | Regularity of Task: One                    | -time  Routine                         |  |  |  |  |
|                                  | CI   | heck-in Procedures                         |  |  |  |  |  |
| Check-in Times                   | Check-in Person                                    | Phone Number                               | Cell Phone Number                      |  |  |  |  |
| 8:00 am & 5:00 pm                | Kurt Weber   | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
| Alternate:                       |  |  |  |  |  |  |  |
|                                  | 1  | Coordinators / Key Personnel               |  |  |  |  |  |
| Name                             | Title  | Phone Number                               | Cell Phone Number                      |  |  |  |  |
| Kurt Webber                      | Training in First Aid / CPR                        | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
| Kurt Webber                      | Project Manager                                    | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
| Kurt Webber                      | Site Supervisor/Site Safety Officer                | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
| Dan Schillings                   | Account SH&E Manager                               | (210) 253-7567                             | (210) 601-4129                         |  |  |  |  |
|                                  | Incident Reporting Line (BY THE END OF THE SHIFT)  | 1.800.348.5046                             | (007) 447 0400                         |  |  |  |  |
| Ross Haeberle                    | Anadarko Petroleum Corporation Project Manager     | (936) 446-8430                             | (936) 446-8430                         |  |  |  |  |
| Eric Olson                       | DOT/IATA Shipping Expert                           | (864) 297-3102                             | (864) 918-2302                         |  |  |  |  |
|                                  |  |  |  |  |  |  |  |
|                                  | Emergenc   | y Agencies / Public Utilities              |  |  |  |  |  |
| Name                             | Type   | Details                                    | Phone Number                           |  |  |  |  |
|                                  | Police   | Details                                    | 911                                    |  |  |  |  |
| Maryneal, TX<br>Maryneal, TX     | Fire   |  | 911                                    |  |  |  |  |
| Maryneal, TX                     | Ambulance  |  | 911                                    |  |  |  |  |
| Rolling Plains Memorial Hospital | Nearest Hospital / Clinic                          | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |  |  |  |  |
| Emergicare                       | Occupational Medical Facility                      | See Below                                  | (325) 795-1888                         |  |  |  |  |
| Emergicare                       | Poison Control Center                              | Jee Below                                  | 800.222.1222                           |  |  |  |  |
|                                  | Pollution / Environmental                          |  | 800.292.4706                           |  |  |  |  |
|                                  | National Response Center                           |  | 800-424-8802                           |  |  |  |  |
|                                  | INFOTRAC (AECOM"s Account Number: 74984)           |  | 800-535-5053                           |  |  |  |  |
|                                  | Tier II or SARA Title III Hot Line                 |  | 800-424-9346                           |  |  |  |  |
|                                  | Common Ground Alliance Nationwide (CALL B 4 U Dig) |  | 811                                    |  |  |  |  |
|                                  | _  |  |  |  |  |  |  |
|                                  | cy Equipment & Supplies                            |  | ncy Plan Details                       |  |  |  |  |
| First Aid Kit - Type:            | ☐ Eye Wash   | Trifilo, Richard D, MD                     |  |  |  |  |  |
| Blankets / Survival:             | ☐ Spill Kit  | 1888 Antilley Road                         |  |  |  |  |  |
| Fire Extinguishers Type:         | Other:   | Abilene, Texas 79606                       |  |  |  |  |  |
| Communication Device             | _  | (325) 795-1888                             |  |  |  |  |  |
| ▼ Vehicle Safety Equipment       |  |  |  |  |  |  |  |



### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off
- CONTROLS

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- Psychosocial stress, violence

### **Hazard Classification**

- •Considers the potential severity of the outcome
- •Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|   | Project Name: Westlake NGP                  |          |            | Proje      | ct Number: 6033          | 5556 Client: Anadarko                                      | Client: Anadarko |  |  |          |  |  |  |  |  |
|---|---|----------|------------|------------|--------------------------|--|------------------|--|--|----------|--|--|--|--|--|
| AECOM   | Supervisor: Kurt Weber                      |          |            | Proje      | ct Manager: Kurl         | Webber Location: Maryneal, Texas                           |                  |  |  |          |  |  |  |  |  |
| 7123771   | THA Developed By: Dan Schillings            |          | u          |            |                          | Date: November 2014 thru November                          | 2015             |  |  |          |  |  |  |  |  |
| TASK HAZARD ANALYSIS  | Task Name: Hand Auger Sampling              |          |            |            |                          | Regularity of Task: One-time  Routine                      | ~                |  |  |          |  |  |  |  |  |
|   |   |          |            |            | ssification              |  |                  |  |  |          |  |  |  |  |  |
|   |   |          |            |            |                          | (before controls)  |                  |  |  | Controls |  |  |  |  |  |
| Job Event Sequence  | Hazards                                     | ity      | Leve Leve  |            |                          |  |                  |  |  |          |  |  |  |  |  |
| (List the major steps of the individual task)   | (List primary hazards)                      | Severity | Likelihood | Risk Level | Hazard<br>Classification | (List controls that AECOM will implement)                  |                  |  |  |          |  |  |  |  |  |
| 1 Tail gate safety briefing,inspect equipment   | None  | 1        | 1          | 1          | Low                      | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| Determine sampling area   | Slips, trips, falls, biological             | 1        | 1          | 1          | Low                      | Standard PPE ensemble; training                            |                  |  |  |          |  |  |  |  |  |
| Verify subsurface utility clearances were completed   | Slips, trips, falls, biological             | 2        | 2          | 4          | Low                      | Standard PPE ensemble; training                            |                  |  |  |          |  |  |  |  |  |
| 4 Assembel sample collection media, tools and supplies  | Slips,trips,falls,cuts,lifting,pinch points | 3        | 4          | 12         | Medium                   | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| 5 Don appropriate PPE   | None  | 3        | 4          | 12         | Medium                   | Standard PPE ensemble; training                            |                  |  |  |          |  |  |  |  |  |
| 6 Correct any equipment deficiencies  | Slips,trips,falls,cuts,lifting,pinch points | 3        | 4          | 12         | Medium                   | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| 7 Position had auger in front of you and establish footing  | Slips,trips,falls,cuts,lifting,pinch points | 3        | 4          | 12         | Medium                   | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| 8 Position hand auger into soil and slowly turn   | Slips,trips,falls,cuts,lifting,bio          | 2        | 3          | 6          | Medium                   | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| 9 Remove hand auger from ground & set on plastic sheeting   | Slips,trips,falls,cuts,lifting,bio          | 3        | 4          | 12         | Medium                   | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| 10 Use hand trowel to collect soil at bottom of hole, record depth  | Slips,trips,falls,cuts,lifting,pinch points | 3        | 4          | 12         | Medium                   | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| 11 Place soil sample(s) with hand trowel into sample media & seal   | Slips,trips,falls,cuts,lifting,pinch points | 2        | 3          | 6          | Medium                   | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| 12 Decontaminate sampling tools and impervious supplies   | Slips, trips, falls, biological             | 2        | 2          | 4          | Low                      | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| 13 Collect IDW for characterization & disposal determination  | Slips,trips,falls,cuts,lifting,pinch points | 2        | 2          | 4          | Low                      | Standard PPE ensemble; training, meters, equipment         |                  |  |  |          |  |  |  |  |  |
| 14 Prepare samples for shipment to designated laboratory  | Slips,trips,falls,cuts,lifting,pinch points | 2        | 2          | 4          | Low                      | Standard PPE ensemble; training                            |                  |  |  |          |  |  |  |  |  |
| 15  |   |          |            |            |                          |  |                  |  |  |          |  |  |  |  |  |
| 16  |   |          |            |            |                          |  |                  |  |  |          |  |  |  |  |  |
| 17  |   |          |            |            |                          |  |                  |  |  |          |  |  |  |  |  |
|   | Hazard Class                                |          |            |            |                          |  |                  |  |  |          |  |  |  |  |  |
| Severity  |   | L        | .ikelih    | ood of     | Occurrence               | Hazard Classification Matrix                               |                  |  |  |          |  |  |  |  |  |
| Remote potential for injury, property damage/\$ loss, or env damage   |   |          | 1 \        | /ery unl   | likely                   | Severity   |                  |  |  |          |  |  |  |  |  |
| 2 Potential for minor first aid injury, property damage/\$ loss, or environmenta                                      | l damage                                    |          | 2 (        | Jnlikely   |                          | 1 2 3 4 5 Risk Level                                       |                  |  |  |          |  |  |  |  |  |
| 3 Potential for moderate personnel injuries, including medical treatment, prop  | S .   |          | 3 L        | ikely      |                          | 2 4 6 8 10 Low Medium 3 6 9 12 15 Medium 4 8 12 16 20 High |                  |  |  |          |  |  |  |  |  |
| negative public impact  | aniago, or                                  |          | 4 \        | ery like   | ely                      | 3 6 9 12 15 Medium   |                  |  |  |          |  |  |  |  |  |
| 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health |   |          |            | Certain    |                          | High       High       High       High                      |                  |  |  |          |  |  |  |  |  |
| 5 Catastrophic damage to people, property/equipment, environment, or public health                                    |   |          |            |            |                          | Risk Level = Likelihood x Severity                         |                  |  |  |          |  |  |  |  |  |

|                           |                                | Project Name: We                  | stlake NGP                 | Project Number: 60335556     |              | Client: Anada     | rko   |           |                    |      |  |  |
|---------------------------|--------------------------------|-----------------------------------|----------------------------|------------------------------|--------------|-------------------|---|-----------|--------------------|------|--|--|
| AEC                       | OM                             | Supervisor: Kurt V                | Veber                      | Project Manager: Kurt Webber |              | Location: Mary    | neal, Texas   |           |                    |      |  |  |
|                           |                                | THA Developed By                  | y: Dan Schillings          |                              |              | Date: Noveml      | oer 2014 thru No  | ovember   | 2015               |      |  |  |
| SUMMARY                   | OF CONTROLS                    | Task Name: Han                    | d Auger Sampling           |                              | Re           | gularity of Task: | One-time  |           | Routine            | ~    |  |  |
| Personal Protective Equ   | ipment (check all that apply)  |                                   |                            | Air Monitoring (refere       | ence HASP m  | onitoring plan)   |   |           |                    |      |  |  |
|                           | ed Boots (Leather or Rubber)   |                                   | No air monitoring required | •                            | <b>✓</b> Air |                   |   |           |                    |      |  |  |
| CSA/ANSI Safety Gla       | asses or Goggles               |                                   | Parameter                  | Location/Monitoring Interval | Response     | e/Action Levels   | •   | Respon    | ponse Activity     |      |  |  |
| CSA/ANSI-approved         | Hard Hat                       |                                   | 1100 L DID                 | B7.00 .                      |              |                   | Continue work and   |           |                    | _    |  |  |
| CSA/ANSI Type II/III      | Reflective Traffic Safety Vest | VOCs by PID                       |                            | BZ, 30 min                   | <            |                   | exist in this accept<br>investigate the pot   |           |                    |      |  |  |
| Leather Gloves/Nitrile    |                                |                                   |                            |                              |              | (                 | Continue work and   |           |                    |      |  |  |
| Hearing Protection        | Coloves for Sampling           |                                   | Oxygen                     | BZ, 30 min >                 |              |                   | exist in this acceptable range, contact the SSO to investigate the potential for contributing factors.  |           |                    |      |  |  |
| Treaming Protection       |                                |                                   |                            |                              |              |                   | nvestigate the pot<br>Continue work and   |           |                    |      |  |  |
| <u>_</u>                  |                                |                                   | LEL                        | BZ, 30 min                   | <            | : 10%             | xist in this accept   | able rang | e, contact the SSO | O to |  |  |
| =                         |                                |                                   |                            |                              |              |                   | nvestigate the pot  |           |                    |      |  |  |
|                           |                                |                                   | H2S                        | BZ, 30 min                   | <            |                   | Continue work and monitoring. If significant changes exist in this acceptable range, contact the SSO to |           |                    |      |  |  |
| Ш                         |                                |                                   |                            | ,                            |              |                   | nvestigate the pot  |           |                    |      |  |  |
| Required Training         | (associated with this THA)     |                                   | Key SOPs (associat         | ted with this THA)           |              |                   | Client & Other  | Require   | ments              |      |  |  |
| 1 Tool specific training  |                                | S3NA-308-PR Manual Lifting, Field |                            |                              |              | WOPER, DOT L      | evel 1 Shipping   | Course    | Safeland Train     | ning |  |  |
| 2 Equipment specific tra  | aining                         | S3NA-307-PR Hou                   | usekeeping, Worksite       |                              |              |                   |   |           |                    |      |  |  |
| 3                         | J                              | S3NA-405-PR Dril                  | · •                        |                              |              |                   |   |           |                    |      |  |  |
| 4                         |                                |                                   | ties, Underground          | 1                            |              |                   |   |           |                    |      |  |  |
| 5                         |                                |                                   | diation, Non-Ionizing      |                              |              |                   |   |           |                    |      |  |  |
| 6                         |                                |                                   | Response, Incidental       |                              |              |                   |   |           |                    |      |  |  |
| 0                         |                                | 33NA-320-PK 3pl                   | ·                          | gement / Signatures          |              |                   |   |           |                    |      |  |  |
| Project Manager / Supervi | isor (signature):              |                                   | Ackilowieu                 | Date:                        |              |                   |   |           |                    |      |  |  |
| , , ,                     | 1                              |                                   | D 1                        |                              |              | 0' '              |   |           | 5.1                |      |  |  |
| Name                      | Signature                      | Company                           | Date                       | Name                         |              | Signature         | Comp  | any       | Date               | е    |  |  |
|                           |                                |                                   |                            |                              |              |                   |   |           |                    |      |  |  |
|                           |                                |                                   |                            |                              |              |                   |   |           |                    |      |  |  |
|                           |                                |                                   |                            |                              |              |                   |   |           |                    |      |  |  |
|                           |                                |                                   |                            |                              |              |                   |   |           |                    |      |  |  |
|                           |                                |                                   |                            |                              |              |                   |   |           |                    |      |  |  |
|                           |                                |                                   |                            |                              |              |                   |   |           |                    |      |  |  |
|                           |                                |                                   |                            |                              |              |                   |   |           |                    |      |  |  |
|                           |                                |                                   |                            |                              |              |                   |   |           |                    |      |  |  |

|   | Project Name: Westlake NGP                         | Project Number: 60335556                   | Client: Anadarko                       |  |  |  |  |
|---|--|--|--|--|--|--|--|
| A=COM   | Supervisor: Kurt Weber                             | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |  |  |  |  |
|   | THA Developed By: Dan Schillings                   |  | Date: November 2014 thru November 2015 |  |  |  |  |
| EMERGENCY RESPONSE PLAN                       | Task Name: Hand Auger Sampling                     | Regularity of Task: One                    | e-time Routine                         |  |  |  |  |
|   | Ch   | neck-in Procedures                         |  |  |  |  |  |
| Check-in Times                                | Check-in Person                                    | Phone Number                               | Cell Phone Number                      |  |  |  |  |
| 8:00 am & 5:00 pm                             | Kurt Weber   | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
| Alternate:                                    |  |  |  |  |  |  |  |
|   | Emergency (  | Coordinators / Key Personnel               |  |  |  |  |  |
| Name  | Title  | Phone Number                               | Cell Phone Number                      |  |  |  |  |
| Kurt Webber                                   | Training in First Aid / CPR                        | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
| Kurt Webber                                   | Project Manager                                    | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
| Kurt Webber                                   | Site Supervisor/Site Safety Officer                | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
| Dan Schillings                                | Account SH&E Manager                               | (210) 253-7567                             | (210) 601-4129                         |  |  |  |  |
|   | Incident Reporting Line (BY THE END OF THE SHIFT)  | 1.800.348.5046                             |  |  |  |  |  |
| Ross Haeberle                                 | Anadarko Petroleum Corporation Project Manager     | (936) 446-8430                             | (936) 446-8430                         |  |  |  |  |
| Eric Olson                                    | DOT/IATA Shipping Expert                           | (864) 297-3102                             | (864) 918-2302                         |  |  |  |  |
|   | • • •  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   | Emergency  | y Agencies / Public Utilities              |  |  |  |  |  |
| Name  | Туре   | Details                                    | Phone Number                           |  |  |  |  |
| Maryneal, TX                                  | Police   |  | 911                                    |  |  |  |  |
| Maryneal, TX                                  | Fire   |  | 911                                    |  |  |  |  |
|   | Ambulance  |  | 911                                    |  |  |  |  |
| Rolling Plains Memorial Hospital              | Nearest Hospital / Clinic                          | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |  |  |  |  |
| Emergicare                                    | Occupational Medical Facility                      | See Below                                  | (325) 795-1888                         |  |  |  |  |
|   | Poison Control Center                              |  | 800.222.1222                           |  |  |  |  |
|   | Pollution / Environmental                          |  | 800.292.4706                           |  |  |  |  |
|   | National Response Center                           |  | 800-424-8802                           |  |  |  |  |
|   | INFOTRAC (AECOM"s Account Number: 74984)           |  | 800-535-5053                           |  |  |  |  |
|   | Tier II or SARA Title III Hot Line                 |  | 800-424-9346                           |  |  |  |  |
|   | Common Ground Alliance Nationwide (CALL B 4 U Dig) |  | 811                                    |  |  |  |  |
|   | - 100 P  | OIL F                                      |  |  |  |  |  |
|   | cy Equipment & Supplies                            |  | ncy Plan Details                       |  |  |  |  |
| First Aid Kit - Type:                         | Eye Wash   | Trifilo, Richard D, MD                     |  |  |  |  |  |
| Blankets / Survival:                          | Spill Kit  | 1888 Antilley Road                         |  |  |  |  |  |
| Fire Extinguishers Type: Communication Device | Other:   | Abilene, Texas 79606                       |  |  |  |  |  |
|   |  | (325) 795-1888                             |  |  |  |  |  |
| ✓ Vehicle Safety Equipment                    |  |  |  |  |  |  |  |



### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off

**CONTROLS** 

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- •Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- •Psychosocial stress, violence

### Hazard Classification

- •Considers the potential severity of the outcome
- Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|    | Project Name: Westlake NGP   |                                   |     |        |        | ct Number: 6033  | 5556                       | Client: Anadarko                       |   |                          |     |
|----|--|-----------------------------------|-----|--------|--------|------------------|----------------------------|--|---|--------------------------|-----|
|    | AECOM  | Supervisor: Kurt Weber            |     |        | Proje  | ct Manager: Kurt | Webber                     | Location: Maryneal                     | Texas                                   |                          |     |
|    | 7.2.00771  | THA Developed By: Dan Schillings  |     |        |        |                  |                            | Date: November 20                      | )14 thru                                | November 20              | )15 |
|    | TASK HAZARD ANALYSIS   | Task Name: Heavy Equipment        |     |        |        |                  | Regularity of Tas          | k: One-time                            |   | Routine                  | >   |
|    |  |                                   |     |        |        | ssification      |                            |  |   |                          |     |
|    | Job Event Sequence (List the major steps of the individual task)   | Hazards<br>(List primary hazards) | III |        |        |                  |                            |  | Controls uls that AECOM will implement) |                          |     |
|    | Tail gate safety briefing,inspect equipment  | None                              | 1   | 1      | 1      | Low              | Standard PPE ensemble; tra |  |   |                          |     |
|    | Inspection of equipment (Inspection checklist)   | Parts could fall on employee      | 1   | 1      | 1      | Low              | Standard PPE ensemble; tra | 0 1 1                                  |   |                          |     |
| 3  | Correct any identified deficiencies from inspection  | Pinch points, nicks               | 2   | 2      | 4      | Low              | Standard PPE ensemble; tra | 0 1 1                                  |   |                          |     |
| 4  | Verify subsurface utility clearances were completed  | Explosion, shock, water damage    | 3   | 3      | 9      | Medium           | Standard PPE ensemble; tra | 0 1 1                                  |   |                          |     |
|    | Ensure all hazardous contaminants are removed  |                                   | 2   | 3      | 6      | Medium           | Standard PPE ensemble; tra | 0 1 1                                  |   |                          |     |
| 6  | Barricade and isolate area/assigned observer   | Public exposure                   | 4   | 3      | 12     | Medium           | Standard PPE ensemble; tra | 0 1 1                                  |   |                          |     |
| 7  | Maintain line of sight and communications with driver  | Could be run over                 | 4   | 3      | 12     | Medium           | Standard PPE ensemble; tra | <u> </u>                               | l commu                                 | nications                |     |
|    |  |                                   | 1   | 1      | 1      | Low              | Standard PPE ensemble; tra |  |   |                          |     |
|    | Complete tasking   |                                   | 2   | 2      | 4      | Low              | Standard PPE ensemble; tra |  |   |                          |     |
|    | End of the day housekeeping  |                                   | 2   | 2      | 4      | Low              | Standard PPE ensemble; tra | ining, equipment                       |   |                          |     |
| 11 |  |                                   |     |        |        |                  |                            |  |   |                          |     |
| 12 |  |                                   |     |        |        |                  |                            |  |   |                          |     |
| 13 |  |                                   |     |        |        |                  |                            |  |   |                          |     |
| 14 |  |                                   |     |        |        |                  |                            |  |   |                          |     |
| 15 |  |                                   |     |        |        |                  |                            |  |   |                          |     |
| 16 |  |                                   |     |        |        |                  |                            |  |   |                          |     |
| 17 |  |                                   |     |        |        |                  |                            |  |   |                          |     |
|    | Counthy  | Hazard Clas                       |     |        |        |                  | 11.                        | Olere iffertion M                      | - 1                                     |                          |     |
|    | Severity   |                                   | L   | ıkelin | 00a oi | Occurrence       | На                         | zard Classification M                  | atrix                                   |                          |     |
|    | <ul> <li>Remote potential for injury, property damage/\$ loss, or env damage</li> <li>Potential for minor first aid injury, property damage/\$ loss, or environmental damage</li> <li>Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact</li> <li>Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health</li> <li>Catastrophic damage to people, property/equipment, environment, or public health</li> </ul> |                                   |     |        |        | ikely            | 1 2 4 8 5 10 Ris           | 9     12     15       12     16     20 | P                                       | sk Level Low Medium High |     |
|    | о основнования с ресую, ргоротусцирния, стиноннен, от рише.  | nount :                           |     |        |        |                  | , Ki:                      | on Ecroi – Lingilliuuu                 | V 90.ACII                               | ·y                       |     |

| Supervisor: Kurt Weber   |                          |                                       | Droject Name: Wa | ctlaka NCD                            | Project Number: 60335556     |        | Client: Anadar     | ko                |         |                 |           |
|--|--------------------------|---------------------------------------|------------------|---------------------------------------|------------------------------|--------|--------------------|-------------------|---------|-----------------|-----------|
| SUMMARY OF CONTROLS  Task Name: Heavy Equipment  Task Name | A = C                    |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
| SUMMARY OF CONTROLS  Task Name: Heavy Equipment  Task Name | AEC                      | UM                                    |                  |                                       | Project Manager: Kurt Webber |        |                    |                   |         |                 |           |
| Personal Protective Equipment (check all that apply)  CSA/ANSI Safety-Toed Boots (Leather or Rubber)  CSA/ANSI Safety-Toed Boots (Leather or Rubber)  CSA/ANSI Safety Glasses or Goggles  CSA/ANSI Safety Glasses or Goggles  CSA/ANSI Safety Glasses or Goggles  CSA/ANSI Type IVIII Reflective Traffic Safety Vest  CSA/ANSI Type IVIII Reflective Traffic Safety Vest  Leather Gloves  Hearing Protection  Required Training (associated with this THA)  Key SOPs (associated with this THA)  Key SOPs (associated with this THA)  Client & Other Requirements  Competent Operators, Communications, Safeland Training, Equipment  SSNA-308-PR Manual Lifting, Field  Equipment Specific Training/Certifications (if required)  SSNA-309-PR Mobile or Heavy Equipment  SSNA-309-PR Mobile or Heavy Equipment  SSNA-309-PR Mobile or Heavy Equipment  SSNA-309-PR Spill Response, Incidental  SSNA-406-PR Electrical Lines, Overhead  Project Manager / Supervisor (signature):  Date:   |                          |                                       | THA Developed By | y: Dan Schillings                     |                              |        | Date: Novemb       | er 2014 thru Nov  | ember   | 2015            |           |
| CSA/ANSI Safety-Toed Boots (Leather or Rubber) CSA/ANSI Safety Glasses or Goggles Parameter Location/Monitoring Interval Response Action Levels Response Activity CSA/ANSI Type It/III Reflective Traffic Safety Vest Leather Gloves Leather Gloves Hearing Protection Required Training (associated with this THA) Required Training (associated with this THA)  Key SOPs (associated with this THA) Client & Other Requirements  Tool specific training Equipment Specific Training/Certifications (if required) S3NA-307-PR Housekeeping, Worksite S3NA-307-PR Housekeeping, Worksite S3NA-307-PR Housekeeping, Worksite S3NA-307-PR Bill Response, Incidental S3NA-307-PR Bill Response, Incidental S3NA-406-PR Electrical Lines, Overhead  Acknowledgement / Signatures  Project Manager / Supervisor (signature): Date:  | SUMMAR                   | Y OF CONTROLS                         | Task Name: Hea   | vy Equipment                          |                              | F      | egularity of Task: | One-time          |         | Routine         | ~         |
| CSA/ANSI Safety Glasses or Goggles  CSA/ANSI Safety Glasses or Goggles  CSA/ANSI approved Hard Hat  CSA/ANSI Type I/I/II Reflective Traffic Safety Vest  Leather Gloves  Hearing Protection  Required Training (associated with this THA)  Key SOPs (associated with this THA)  Client & Other Requirements  Tool specific training  Equipment Specific Training/Certifications (if required)  SaNA-308-PR Manual Lifting, Field  Equipment Specific Training/Certifications (if required)  SaNA-309-PR Mobile or Heavy Equipment  SanA-309-PR Housekeeping, Worksite  SanA-309-PR Housekeeping, Worksite  SanA-309-PR Spill Response, Incidental  SanA-309-PR Spill Response, Incidental  SanA-309-PR Spill Response, Incidental  SanA-309-PR Spill Response, Incidental  SanA-406-PR Electrical Lines, Overhead  Acknowledgement / Signatures  |                          |                                       |                  |                                       | Air Monitoring (refere       |        |                    |                   |         |                 |           |
| ✓ CSA/ANSI-approved Hard Hat       ✓ CSA/ANSI Type II/III Reflective Traffic Safety Vest       ✓ Leather Gloves         ✓ Leather Gloves       ✓ Hearing Protection       ✓ Hearing Protection         ✓ Required Training (associated with this THA)       Key SOPs (associated with this THA)       Client & Other Requirements         1       Tool specific training       S3NA-308-PR Manual Lifting, Field       Competent Operators, Communications, Safeland Training, Equipment         2       Equipment Specific Training/Certifications (if required)       S3NA-309-PR Mobile or Heavy Equipment       Checklists         3       S3NA-307-PR Housekeeping, Worksite       Checklists       Checklists         4       S3NA-417-PR Utilities, Underground       Checklists         5       S3NA-417-PR Utilities, Underground       S3NA-406-PR Electrical Lines, Overhead         Acknowledgement / Signatures   |                          |                                       | ~                | 140 dii monitoring required           |                              |        |                    |                   |         |                 |           |
| ✓ CSA/ANSI Type II/III Reflective Traffic Safety Vest       Leather Gloves         ✓ Leather Gloves       Hearing Protection         ✓ Hearing Protection       Client & Other Requirements         Required Training (associated with this THA)       Key SOPs (associated with this THA)       Client & Other Requirements         1 Tool specific training       S3NA-308-PR Manual Litting, Field       Competent Operators, Communications, Safeland Training, Equipment         2 Equipment Specific Training/Certifications (if required)       S3NA-307-PR Mobile or Heavy Equipment       Checklists         3       S3NA-307-PR Housekeeping, Worksite       Checklists         4       S3NA-307-PR Housekeeping, Worksite       Checklists         5       S3NA-417-PR Utilities, Underground       Checklists         5       S3NA-520-PR Spill Response, Incidental       Checklists         6       S3NA-406-PR Electrical Lines, Overhead       Date:   |                          |                                       |                  | Parameter                             | Location/Monitoring Interval | Respon | se/Action Levels   | R                 | espon:  | se Activity     |           |
| Leather Gloves   Hearing Protection  | _ '                      |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
| Hearing Protection  Hearing Protection  Required Training (associated with this THA)  Required Training (associated with this THA)  Required Training (associated with this THA)  Sank-308-PR Manual Lifting, Field  Equipment Specific Training/Certifications (if required)  Sank-309-PR Mobile or Heavy Equipment  Sank-309-PR Mobile or Heavy Equipment  Sank-307-PR Housekeeping, Worksite  Sank-307-PR Housekeeping, Worksite  Sank-417-PR Utilities, Underground  Sank-520-PR Spill Response, Incidental  Sank-406-PR Electrical Lines, Overhead  Acknowledgement / Signatures  Project Manager / Supervisor (signature):  Date:  |                          | Reflective Traffic Safety Vest        |                  |                                       |                              |        |                    |                   |         |                 |           |
| Required Training (associated with this THA)  Client & Other Requirements  Competent Operators, Communications, Safeland Training, Equipment Checklists  SanA-307-PR Housekeeping, Worksite  3 SanA-307-PR Housekeeping, Worksite  3 SanA-307-PR Utilities, Underground  5 SanA-417-PR Utilities, Underground  6 SanA-520-PR Spill Response, Incidental  6 SanA-406-PR Electrical Lines, Overhead  Project Manager / Supervisor (signature):  Date:  | Localitor Cloves         |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
| 1 Tool specific training 2 Equipment Specific Training/Certifications (if required) 3 S3NA-309-PR Mobile or Heavy Equipment 4 S3NA-417-PR Utilities, Underground 5 S3NA-520-PR Spill Response, Incidental 6 S3NA-406-PR Electrical Lines, Overhead  Project Manager / Supervisor (signature):  Competent Operators, Communications, Safeland Training, Equipment Checklists  Checklists  Checklists  Acknowledgement / Signatures  Date:   | Hearing Protection       |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
| 1 Tool specific training 2 Equipment Specific Training/Certifications (if required) 3 S3NA-309-PR Mobile or Heavy Equipment 4 S3NA-417-PR Utilities, Underground 5 S3NA-520-PR Spill Response, Incidental 6 S3NA-406-PR Electrical Lines, Overhead  Project Manager / Supervisor (signature):  Competent Operators, Communications, Safeland Training, Equipment Checklists  Checklists  Checklists  Acknowledgement / Signatures  Date:   |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
| 1 Tool specific training 2 Equipment Specific Training/Certifications (if required) 3 S3NA-309-PR Mobile or Heavy Equipment 4 S3NA-417-PR Utilities, Underground 5 S3NA-520-PR Spill Response, Incidental 6 S3NA-406-PR Electrical Lines, Overhead  Project Manager / Supervisor (signature):  Competent Operators, Communications, Safeland Training, Equipment Checklists  Checklists  Competent Operators, Communications, Safeland Training, Equipment Checklists  Checklists  Checklists  Acknowledgement / Signatures  Date:   |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
| 1 Tool specific training 2 Equipment Specific Training/Certifications (if required) 3 S3NA-309-PR Mobile or Heavy Equipment 4 S3NA-417-PR Utilities, Underground 5 S3NA-520-PR Spill Response, Incidental 6 S3NA-406-PR Electrical Lines, Overhead  Project Manager / Supervisor (signature):  Competent Operators, Communications, Safeland Training, Equipment Checklists  Checklists  Competent Operators, Communications, Safeland Training, Equipment Checklists  Checklists  Checklists  Acknowledgement / Signatures  Date:   |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
| 1 Tool specific training 2 Equipment Specific Training/Certifications (if required) 3 S3NA-309-PR Mobile or Heavy Equipment 4 S3NA-417-PR Utilities, Underground 5 S3NA-520-PR Spill Response, Incidental 6 S3NA-406-PR Electrical Lines, Overhead  Project Manager / Supervisor (signature):  Competent Operators, Communications, Safeland Training, Equipment Checklists  Checklists  Competent Operators, Communications, Safeland Training, Equipment Checklists  Checklists  Checklists  Acknowledgement / Signatures  Date:   |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
| 2 Equipment Specific Training/Certifications (if required) S3NA-309-PR Mobile or Heavy Equipment S3NA-309-PR Mobile or Heavy Equipment S3NA-309-PR Mobile or Heavy Equipment S3NA-309-PR Housekeeping, Worksite S3NA-417-PR Utilities, Underground S3NA-417-PR Utilities, Underground S3NA-520-PR Spill Response, Incidental S3NA-520-PR Spill Response, Incidental S3NA-406-PR Electrical Lines, Overhead Acknowledgement / Signatures  Project Manager / Supervisor (signature): Date:   | Required Training        | (associated with this THA)            |                  | Key SOPs (associat                    | ed with this THA)            |        | C                  | Client & Other Re | equire  | ments           |           |
| 2 Equipment Specific Training/Certifications (if required) S3NA-309-PR Mobile or Heavy Equipment 3 S3NA-307-PR Housekeeping, Worksite 4 S3NA-417-PR Utilities, Underground 5 S3NA-520-PR Spill Response, Incidental 6 S3NA-406-PR Electrical Lines, Overhead  Acknowledgement / Signatures  Project Manager / Supervisor (signature):  Date:   | 1 Tool specific training |                                       | S3NA-308-PR Ma   | nual Lifting, Field                   |                              | Сс     | mpetent Operators  | , Communication   | s, Safe | eland Training, | Equipment |
| 4 S3NA-417-PR Utilities, Underground 5 S3NA-520-PR Spill Response, Incidental 6 S3NA-406-PR Electrical Lines, Overhead  Acknowledgement / Signatures  Project Manager / Supervisor (signature):  Date:   | 2 Equipment Specific 1   | Fraining/Certifications (if required) |                  | •                                     |                              | Ch     | ecklists           |                   |         |                 |           |
| S3NA-417-PR Utilities, Underground  S3NA-520-PR Spill Response, Incidental  S3NA-406-PR Electrical Lines, Overhead  Acknowledgement / Signatures  Project Manager / Supervisor (signature):  Date:   | 3                        |                                       | S3NA-307-PR Hou  | usekeeping, Worksite                  |                              |        |                    |                   |         |                 |           |
| S3NA-520-PR Spill Response, Incidental S3NA-406-PR Electrical Lines, Overhead  Acknowledgement / Signatures  Project Manager / Supervisor (signature): Date:   | 4                        |                                       |                  | · · · · · · · · · · · · · · · · · · · |                              |        |                    |                   |         |                 |           |
| 6 S3NA-406-PR Electrical Lines, Overhead  Acknowledgement / Signatures  Project Manager / Supervisor (signature): Date:  | 5                        |                                       |                  | *                                     |                              |        |                    |                   |         |                 |           |
| Acknowledgement / Signatures  Project Manager / Supervisor (signature):  Date:   | 6                        |                                       |                  | · · · · · · · · · · · · · · · · · · · |                              |        |                    |                   |         |                 |           |
| Project Manager / Supervisor (signature):  Date:   |                          |                                       |                  |                                       | gement / Signatures          |        |                    |                   |         |                 |           |
| Name Signature Company Date Name Signature Company Date  | Project Manager / Superv | risor (signature):                    |                  |                                       | Date:                        |        |                    |                   |         |                 |           |
|  | Name                     | Signature                             | Company          | Date                                  | Name                         |        | Signature          | Compan            | ıy      | Date            | е         |
|  |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
|  |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
|  |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
|  |                          |                                       |                  |                                       |                              |        |                    |                   | 寸       |                 |           |
|  |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
|  |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |
|  |                          |                                       |                  |                                       |                              |        |                    |                   | _       |                 |           |
|  |                          |                                       |                  |                                       |                              |        |                    |                   |         |                 |           |

|                                  |           | Project Name: Westlake NGP                       | Project Number: 60335556       |                        | Client:   | Anadaı    | rko                         |             |
|----------------------------------|-----------|--|--------------------------------|------------------------|-----------|-----------|-----------------------------|-------------|
| A=COM                            |           | Supervisor: Kurt Weber                           | Project Manager: Kurt Webbe    | :r                     | Locatio   | on: Mary  | yneal, Texas                |             |
|                                  | l         | THA Developed By: Dan Schillings                 |                                |                        | Date:     | Novemb    | ber 2014 thru November 2015 |             |
| EMERGENCY RESPONSE PLA           | N         | Task Name: Heavy Equipment                       |                                | Regularity of Task: Or | ne-time   |           | Routine                     | <b>&gt;</b> |
|                                  |           | Ch   | heck-in Procedures             |                        |           |           |                             |             |
| Check-in Times                   |           | Check-in Person                                  | Phone                          | Number                 |           |           | Cell Phone Number           |             |
| 8:00 am & 5:00 pm                |           | Weber  | (903) 5                        | 520-4408               |           |           | (903) 283-1446              |             |
| Alternat                         | e:        |  |                                |                        |           |           |                             |             |
|                                  |           | ¥ 3  | Coordinators / Key Personnel   |                        |           |           |                             |             |
| Name                             |           | Title  | Phone                          | Number                 |           |           | Cell Phone Number           |             |
| Kurt Webber                      |           | ning in First Aid / CPR                          |                                | 520-4408               |           |           | (903) 283-1446              |             |
| Kurt Webber                      |           | ect Manager                                      |                                | 735-7067               |           |           | (972) 310-3729              |             |
| Kurt Webber                      |           | Supervisor/Site Safety Officer                   |                                | 735-7067               |           |           | (972) 310-3729              |             |
| Dan Schillings                   |           | ount SH&E Manager                                |                                | 253-7567               |           |           | (210) 601-4129              |             |
|                                  |           | dent Reporting Line (BY THE END OF THE SHIFT)    |                                | 348.5046               |           |           |                             |             |
| Ross Haeberle                    |           | darko Petroleum Corporation Project Manager      |                                | 446-8430               |           |           | (936) 446-8430              |             |
| Eric Olson                       | DOT       | /IATA Shipping Expert                            | (864) 2                        | 297-3102               |           |           | (864) 918-2302              |             |
|                                  |           |  |                                |                        |           |           |                             |             |
|                                  | <u> —</u> |  |                                |                        | <u> </u>  |           |                             |             |
|                                  | —         |  | cy Agencies / Public Utilities |                        |           |           |                             |             |
| Name                             |           | Туре   | De                             | etails                 |           |           | Phone Number                |             |
| Maryneal, TX                     | Polic     |  |                                |                        | 911       |           |                             |             |
| Maryneal, TX                     | Fire      |  |                                |                        | 911       |           |                             |             |
| Maryneal, TX                     |           | pulance  |                                |                        | 911       |           |                             |             |
| Rolling Plains Memorial Hospital |           | rest Hospital / Clinic                           | 200 East Arizona Street, Swee  | etwater, Texas         |           | 235-170   |                             |             |
| Emergicare                       |           | upational Medical Facility                       | See Below                      |                        |           | 795-188   |                             |             |
|                                  |           | on Control Center                                |                                |                        |           | 22.1222   |                             |             |
|                                  |           | ution / Environmental                            |                                |                        |           | 92.4706   |                             |             |
|                                  |           | onal Response Center                             |                                |                        |           | 24-8802   |                             |             |
|                                  |           | OTRAC (AECOM"s Account Number: 74984)            |                                |                        |           | 35-5053   |                             |             |
|                                  |           | II or SARA Title III Hot Line                    |                                |                        |           | 24-9346   |                             |             |
|                                  | Com       | nmon Ground Alliance Nationwide (CALL B 4 U Dig) |                                |                        | 811       |           |                             |             |
|                                  | <u> </u>  |  |                                |                        |           | 2         |                             |             |
|                                  |           | quipment & Supplies                              |                                | Other Emerg            | ency Plan | ı Details | \$                          |             |
| First Aid Kit - Type:            |           | Eye Wash   | Trifilo, Richard D, MD         |                        |           |           |                             |             |
| Blankets / Survival:             |           | Spill Kit  | 1888 Antilley Road             |                        |           |           |                             |             |
| Fire Extinguishers Type:         |           | Other:   | Abilene, Texas 79606           |                        |           |           |                             |             |
| Communication Device             | _         |  | (325) 795-1888                 |                        |           |           |                             |             |
| Vehicle Safety Equipment         |           |  |                                |                        |           |           |                             |             |



### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off
- CONTROLS

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- •Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- •Psychosocial stress, violence

### **Hazard Classification**

- •Considers the potential severity of the outcome
- Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|  | Project Name: Westlake NGP              |          |            | Proje  | ct Number: 6033           | S5556 Client: Anadarko   |  |  |  |
|--|---|----------|------------|--|---------------------------|--|--|--|--|
| AECOM  | Supervisor: Kurt Weber                  |          |            | Proje  | ct Manager: Kurt          | t Webber Location: Maryneal, Texas                                     |  |  |  |
| 7120771  | THA Developed By: Dan Schillings        |          |            |  |                           | Date: November 2014 thru November 2015                                 |  |  |  |
| TASK HAZARD ANALYSIS   | Task Name: Loading and Hauling Mat      | erials   |            |  |                           | Regularity of Task: One-time  Routine                                  |  |  |  |
|  |   |          |            |  | assification<br>controls) |  |  |  |  |
| Job Event Sequence (List the major steps of the individual task)   | Hazards<br>(List primary hazards)       | Severity | Likelihood | Controls (List controls that AECOM will implement) |                           |  |  |  |  |
| 1 Tail gate safety briefing,inspect equipment  | Pinch points, slips, trips and falls    | 1        | 1          | 1  | Low                       | Standard PPE ensemble; training, equipment                             |  |  |  |
| Verify locations of soil to be separated and removed   | Other moving heavy equipment            | 1        | 1          | 1  | Low                       | Standard PPE ensemble; training, equipment                             |  |  |  |
| 3 Conduct pre-op inspection of backhoe/frontend loader   | None                                    | 1        | 1          | 1  | Low                       | Standard PPE ensemble; training, equipment                             |  |  |  |
| 4 Don applicable PPE   | None                                    | 1        | 1          | 1  | Low                       | Standard PPE ensemble; training, equipment                             |  |  |  |
| 5 Correct any deficiencies identified during inspection  | Biological, slip, trips and falls       | 2        | 3          | 6  | Medium                    | Standard PPE ensemble; training, equipment                             |  |  |  |
| 6 Inspect PPE  | None                                    | 2        | 2          | 4  | Low                       | Standard PPE ensemble; training, equipment                             |  |  |  |
| 7 Don appropriate PPE (as needed)  | None                                    | 2        | 2          | 4  | Low                       | Standard PPE ensemble; training, equipment and communications          |  |  |  |
| 8 Establish spotter for removal operations   | Roll overs                              | 2        | 3          | 6  | Medium                    | Standard PPE ensemble; training, equipment                             |  |  |  |
| 9 Commence removal/placement operations  | Awareness of surrounding area           | 3        | 4          | 12   | Medium                    | Standard PPE ensemble; training, equipment and communications          |  |  |  |
| 10 Complete taskings   | Roll overs                              | ·        |            |  |                           | Standard PPE ensemble; training, equipment and communications          |  |  |  |
| 11 Service equipment   | Pinch points, slips, trips and falls    | 2        | 2          | 4  | Low                       | Standard PPE ensemble; training, equipment                             |  |  |  |
| 12 House keeping   | Biological, slip, trips and falls       | 2        | 2          | 4  | Low                       | Standard PPE ensemble; training, equipment                             |  |  |  |
| 13   |   |          |            |  |                           |  |  |  |  |
| 14   |   |          |            |  |                           |  |  |  |  |
| 15   |   |          |            |  |                           |  |  |  |  |
| 16   |   |          |            |  |                           |  |  |  |  |
| 17   |   |          |            |  |                           |  |  |  |  |
|  | Hazard Clas                             |          |            |  |                           |  |  |  |  |
| Severity   |   |          | Likelih    | ood of   | f Occurrence              | Hazard Classification Matrix   |  |  |  |
| <ul> <li>1 Remote potential for injury, property damage/\$ loss, or env damage</li> <li>2 Potential for minor first aid injury, property damage/\$ loss, or environmental damage</li> <li>3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or</li> </ul> |   |          | 2 l<br>3 l | /ery unl<br>Jnlikely<br>.ikely                     | ·                         | Severity  1 2 3 4 5  8 2 4 6 8 10  2 3 6 9 12 15  9 4 8 12 16 20  High |  |  |  |
| negative public impact  4 Potential for a serious injury, major property damage/\$ loss, serious impact  | t to the environment, and public health |          |            | /ery like<br>Certain                               | ely                       | 4 8 12 16 20<br>5 10 15 20 25  |  |  |  |
| 5 Catastrophic damage to people, property/equipment, environment, or pub   | ic health                               |          |            |  |                           | Risk Level = Likelihood x Severity                                     |  |  |  |

|   | Project Name: Wes  | stlake NGP                            | Project Number: 60335556     | Client: Anadarko                       |                                  |                              |               |    |  |  |  |
|---|--------------------|---------------------------------------|------------------------------|--|----------------------------------|------------------------------|---------------|----|--|--|--|
| AECOM   | Supervisor: Kurt V |                                       | Project Manager: Kurt Webber |  | Location: Mary                   |                              |               |    |  |  |  |
| A=CO/VI   | THA Developed By   |                                       | J-st manager nare tropper    |  |                                  | er 2014 thru Novemb          | er 2015       |    |  |  |  |
| CUMMA DV OF CONTROL C   |                    |                                       |                              |  |                                  |                              |               | V  |  |  |  |
| SUMMARY OF CONTROLS   | Task Name: Loadi   | ing and Hauling Materials             |                              | Regularity of Task: One-time   Routine |                                  |                              |               |    |  |  |  |
| Personal Protective Equipment (check all that apply)  |                    | <u> </u>                              | Air Monitoring (refer        |  |                                  |                              |               |    |  |  |  |
| CSA/ANSI Safety-Toed Boots (Leather or Rubber)  | ~                  | No air monitoring required  Parameter | Lastina Manitaria a Internal |  | monitoring require/Action Levels | ed ( <i>see procedures b</i> |               |    |  |  |  |
| <ul><li>✓ CSA/ANSI Safety Glasses or Goggles</li><li>✓ CSA/ANSI-approved Hard Hat</li></ul> |                    | Parameter                             | Location/Monitoring Interval | Respons                                | e/Action Leveis                  | Resp                         | onse Activity |    |  |  |  |
| CSA/ANSI Type II/III Reflective Traffic Safety Vest   |                    |                                       |                              |  |                                  |                              |               |    |  |  |  |
| Leather Gloves  |                    |                                       |                              |  |                                  |                              |               |    |  |  |  |
| Hearing Protection  |                    |                                       |                              |  |                                  |                              |               |    |  |  |  |
| Healing Protection  |                    |                                       |                              |  |                                  |                              |               |    |  |  |  |
| <u></u>   |                    |                                       |                              |  |                                  |                              |               |    |  |  |  |
| <u></u>   |                    |                                       |                              |  |                                  |                              |               |    |  |  |  |
| П.  | _                  |                                       |                              |  |                                  |                              |               |    |  |  |  |
| <u></u>   |                    |                                       |                              |  |                                  |                              |               |    |  |  |  |
| Required Training (associated with this THA)  |                    | Key SOPs (associa                     | ted with this THA)           |  | C                                | Client & Other Requi         | rements       |    |  |  |  |
| 1 Tool specific training  | S3NA-308-PR Mar    | nual Lifting, Field                   |                              | Saf                                    | eland Training, co               | mpetent operators            |               |    |  |  |  |
| 2 Equipment specific training   | S3NA-309-PR Mol    | pile or Heavy Equipment               |                              |  |                                  |                              |               |    |  |  |  |
| 3   | S3NA-307-PR Hou    | ısekeeping, Worksite                  |                              |  |                                  |                              |               |    |  |  |  |
| 4   | S3NA-520-PR Spil   | l Response, Incidental                |                              |  |                                  |                              |               |    |  |  |  |
| <b> </b> '  |                    |                                       |                              |  |                                  |                              |               |    |  |  |  |
| 5   | ,                  |                                       |                              |  |                                  |                              |               |    |  |  |  |
|   | ·                  |                                       |                              |  |                                  |                              |               |    |  |  |  |
| 5   |                    | Acknowled                             | gement / Signatures          |  |                                  |                              |               |    |  |  |  |
| 5   |                    | Acknowled                             | gement / Signatures  Date:   |  |                                  |                              |               |    |  |  |  |
| 5<br>6  | Company            | Acknowled  Date                       | •                            |  | Signature                        | Company                      | Dat           | e  |  |  |  |
| 5 6 Project Manager / Supervisor (signature):   |                    |                                       | Date:                        |  | Signature                        | Company                      | Dat           | e  |  |  |  |
| 5 6 Project Manager / Supervisor (signature):   |                    |                                       | Date:                        |  | Signature                        | Company                      | Dat           | e  |  |  |  |
| 5 6 Project Manager / Supervisor (signature):   |                    |                                       | Date:                        |  | Signature                        | Company                      | Dat           | e  |  |  |  |
| 5 6 Project Manager / Supervisor (signature):   |                    |                                       | Date:                        |  | Signature                        | Company                      | Dat           | 'e |  |  |  |
| 5 6 Project Manager / Supervisor (signature):   |                    |                                       | Date:                        |  | Signature                        | Company                      | Dat           | te |  |  |  |
| 5<br>6<br>Project Manager / Supervisor (signature):   |                    |                                       | Date:                        |  | Signature                        | Company                      | Dat           | te |  |  |  |
| 5<br>6<br>Project Manager / Supervisor (signature):   |                    |                                       | Date:                        |  | Signature                        | Company                      | Dat           | ie |  |  |  |

|  | Project Name: Westlake NGP                         | Project Number: 60335556                   | Client: Anadarko                       |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| A=COM                                      | Supervisor: Kurt Weber                             | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |  |  |  |  |  |
|  | THA Developed By: Dan Schillings                   |  | Date: November 2014 thru November 2015 |  |  |  |  |  |
| EMERGENCY RESPONSE PLAN                    | Task Name: Loading and Hauling Materials           | Regularity of Task: One                    | e-time  Routine                        |  |  |  |  |  |
|  | CI   | neck-in Procedures                         |  |  |  |  |  |  |
| Check-in Times                             | Check-in Person                                    | Phone Number                               | Cell Phone Number                      |  |  |  |  |  |
| 8:00 am & 5:00 pm                          | Kurt Weber   | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |  |
| Alternate:                                 |  |  |  |  |  |  |  |  |
|  | Emergency  | Coordinators / Key Personnel               |  |  |  |  |  |  |
| Name                                       | Title  | Phone Number                               | Cell Phone Number                      |  |  |  |  |  |
| Kurt Webber                                | Training in First Aid / CPR                        | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |  |
|  | Project Manager                                    | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |  |
|  | Site Supervisor/Site Safety Officer                | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |  |
|  | Account SH&E Manager                               | (210) 253-7567                             | (210) 601-4129                         |  |  |  |  |  |
|  | Incident Reporting Line (BY THE END OF THE SHIFT)  | 1.800.348.5046                             |  |  |  |  |  |  |
|  | Anadarko Petroleum Corporation Project Manager     | (936) 446-8430                             | (936) 446-8430                         |  |  |  |  |  |
| Eric Olson                                 | DOT/IATA Shipping Expert                           | (864) 297-3102                             | (864) 918-2302                         |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | · · · · · · · · · · · · · · · · · · ·              | cy Agencies / Public Utilities             |  |  |  |  |  |  |
| Name                                       | Туре   | Details                                    | Phone Number                           |  |  |  |  |  |
| · <i>j</i>                                 | Police   |  | 911                                    |  |  |  |  |  |
|  | Fire   |  | 911                                    |  |  |  |  |  |
|  | Ambulance  |  | 911                                    |  |  |  |  |  |
|  | Nearest Hospital / Clinic                          | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |  |  |  |  |  |
|  | Occupational Medical Facility                      | See Below                                  | (325) 795-1888                         |  |  |  |  |  |
|  | Poison Control Center                              |  | 800.222.1222                           |  |  |  |  |  |
|  | Pollution / Environmental                          |  | 800.292.4706                           |  |  |  |  |  |
|  | National Response Center                           |  | 800-424-8802                           |  |  |  |  |  |
|  | INFOTRAC (AECOM"s Account Number: 74984)           |  | 800-535-5053                           |  |  |  |  |  |
|  | Tier II or SARA Title III Hot Line                 |  | 800-424-9346                           |  |  |  |  |  |
|  | Common Ground Alliance Nationwide (CALL B 4 U Dig) |  | 811                                    |  |  |  |  |  |
|  | N. Fauinment & Cumplice                            | Other Emerge                               | L<br>ncy Plan Details                  |  |  |  |  |  |
|  | cy Equipment & Supplies                            | Trifilo, Richard D, MD                     | ncy Plan Details                       |  |  |  |  |  |
| First Aid Kit - Type: Blankets / Survival: | Eye Wash Spill Kit                                 | 1888 Antilley Road                         |  |  |  |  |  |  |
| Fire Extinguishers Type:                   | Other:   | Abilene, Texas 79606                       |  |  |  |  |  |  |
| Communication Device                       | LI OUR.  | (325) 795-1888                             |  |  |  |  |  |  |
| Vehicle Safety Equipment                   |  | (320) 190-1000                             |  |  |  |  |  |  |
| remide Salety Equipment                    |  |  |  |  |  |  |  |  |



### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off

**CONTROLS** 

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- •Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- •Psychosocial stress, violence

### **Hazard Classification**

- •Considers the potential severity of the outcome
- Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|   | Project Name: Westlake NGP        |          |                   | Proje   | ct Number: 6033          | 5556  | Client: Anadarko       |             |                 |   |
|---|-----------------------------------|----------|-------------------|---|--------------------------|---|------------------------|-------------|-----------------|---|
| AECOM   | Supervisor: Kurt Weber            |          |                   | Proje   | ct Manager: Kurt         | Webber  | Location: Maryneal,    | Texas       |                 |   |
|   | THA Developed By: Dan Schillings  |          |                   |   |                          |   | Date: November 20      | 14 thru Nov | ember 2015      |   |
| TASK HAZARD ANALYSIS  | Task Name: Mob and Demob          |          |                   |   |                          | Regularity of Tas                                       | k: One-time            | □ Ro        | outine <b>F</b> | < |
|   |                                   |          |                   |   | ssification<br>controls) |   |                        |             |                 |   |
| Job Event Sequence (List the major steps of the individual task)  | Hazards<br>(List primary hazards) | Severity | Likelihood        | Risk Level  | Hazard<br>Classification | Controls  (List controls that AECOM will implement)     |                        |             |                 |   |
| 1 Tail gate safety briefing, Inspect equipment  | None                              | 1        | 1                 | 1   | Low                      |   |                        |             |                 |   |
| 2 Go over equipment safety cards where applicable   | None                              | 1        | 1                 | 1   | Low                      |   |                        |             |                 |   |
| 3 Brief and follow local safety criteria for the site visiting  | None                              | 1        | 1                 | 1   | Low                      |   |                        |             |                 |   |
| 4 All loads in excess of 49 pounds require use of mechanical  | None                              | 1        | 1                 | 1   | Low                      | Obtain correct equipment to                             | assist or additional p | ersonnel    |                 |   |
| 5 aids or assistance from other personnel.  | None                              | 1        | 1                 | 1   | Low                      | 0.61  |                        |             |                 |   |
| 6 Use spotters when loading/unloading heavy equipment,  | None                              | 1        | 1                 | 1   | Low                      | Safety cones, additional pers                           | sonnei                 |             |                 |   |
| 7 forklifts, etc. Stand clear of these operations.  | None                              | 1        | 1                 | 1   | Low                      |   |                        |             |                 |   |
| 8 Do not enter tank, vats, sumps, holes, or other potential   | None                              | 1        | 1                 | 1   | Low                      | Demoks toolston controls                                | _                      |             |                 |   |
| 9 confined spaces without a Confined Space Entry Procedure,   | None                              | 1        | 1                 | 1   | Low                      | Permits, training, evaluations                          |                        |             |                 |   |
| 10 Hazard Evaluation, and Permit completed.   | None                              | 1        | 1                 | 1   | Low                      | I   | - t                    |             |                 |   |
| 11 Ensure all project supplies are suitable for transportation.   | None                              | 1        | 1                 | 1   | Low                      | Is equipment too sensitive fo                           |                        |             |                 |   |
| 12 Ensure that equipment, materials, chemicals, etc. have been  | None                              | 1        | 1                 | 1   | Low                      | Pretrip evaluation checklist, t                         | lie downs              |             |                 |   |
| 13 secured for transportation   | None                              | 1        | 1                 | 1   | Low                      | CIMID   |                        |             |                 |   |
| 14 DO NOT overload trucks, trailers, etc. If more room is needed,   | None                              | 1        | 1                 | 1   | Low                      | GVWR  |                        |             |                 |   |
| or loads are to large, obtain additional transportation.  | None                              | 1        | 1                 | 1   | Low                      |   |                        |             |                 |   |
| 16 Inspect Equipment / complete equip. inspection forms   | None                              | 1        | 1                 | 1   | Low                      |   |                        |             |                 |   |
| 17 Correct any deficiency   | None Hazard Class                 | 1        | 1                 | 1   | Low                      |   |                        |             |                 |   |
| Severity  | Hazard Clas                       |          |                   |   | Occurrence               | Ша  | zard Classification Ma | atriv       |                 |   |
| Remote potential for injury, property damage/\$ loss, or env damage  Potential for minor first aid injury, property damage/\$ loss, or environmental damage  Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or egative public impact  Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  Catastrophic damage to people, property/equipment, environment, or public health |                                   |          | 2 L<br>3 L<br>4 \ | ery unl<br>Inlikely<br>ikely<br>ery like<br>Certain | ,                        | 1 2 poo   1   2   3   6   6   6   6   6   6   6   6   6 | 9 12 15<br>12 16 20    | Hig         | ow/<br>lium     |   |
| з саказворние маннауе то реорие, ргорензулерирниени, епунклинени, от ришис  | icanii                            |          |                   |   |                          | KI  | ov povet = prelitioon  | A Severity  |                 |   |

|  | Project Name: We   | stlake NGP                            | Project Number: 60335556                | Client: Anadarko |                          |                              |               |    |  |  |  |
|--|--------------------|---------------------------------------|---|------------------|--------------------------|------------------------------|---------------|----|--|--|--|
| AECOM  | Supervisor: Kurt V |                                       | Project Manager: Kurt Webber            |                  | Location: Mary           |                              |               |    |  |  |  |
| AECOM  | THA Developed B    |                                       | · j · · · · · · · · · · · · · · · · · · |                  |                          | er 2014 thru Noveml          | er 2015       |    |  |  |  |
| SUMMARY OF CONTROLS                                  | Task Name: Mob     | · · · · · · · · · · · · · · · · · · · |   | Re               | egularity of Task:       | One-time                     |               | ~  |  |  |  |
| Personal Protective Equipment (check all that apply) |                    |                                       | Air Monitoring (refer                   |                  | te HASP monitoring plan) |                              |               |    |  |  |  |
| CSA/ANSI Safety-Toed Boots (Leather or Rubber)       | ~                  | No air monitoring required            | 7th Morntoring (refer                   |                  |                          | ed ( <i>see procedures</i> ) | below)        |    |  |  |  |
| CSA/ANSI Safety Glasses or Goggles                   |                    | Parameter                             | Location/Monitoring Interval            |                  | se/Action Levels         |                              | onse Activity |    |  |  |  |
| CSA/ANSI-approved Hard Hat                           |                    |                                       |   |                  |                          | ·                            | •             |    |  |  |  |
| CSA/ANSI Type II/III Reflective Traffic Safety Vest  | 1                  |                                       |   |                  |                          |                              |               |    |  |  |  |
| Leather Gloves                                       |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
| Hearing Protection                                   | 1                  |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  | 1                  |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  | 1                  |                                       |   |                  |                          |                              |               |    |  |  |  |
| Required Training (associated with this THA)         |                    | Key SOPs (associa                     | ted with this THA)                      |                  | C                        | lient & Other Requ           | rements       |    |  |  |  |
| 1 Tool specific training                             | S3NA-305-PR Hai    | nd and Power Tools                    |   | Saf              | eland Training           |                              |               |    |  |  |  |
| Driver and Vehicle Safety Awareness                  | S3NA-308-PR Ma     | nual Lifting, Field                   |   |                  |                          |                              |               |    |  |  |  |
| 3  |                    | Ţ                                     |   |                  |                          |                              |               |    |  |  |  |
| 4  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
| 5  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
| 6  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    | Acknowled                             | gement / Signatures                     |                  |                          |                              |               |    |  |  |  |
| Project Manager / Supervisor (signature):            |                    |                                       | Date:                                   |                  |                          |                              |               |    |  |  |  |
| Name Signature                                       | Company            | Date                                  | Name                                    |                  | Signature                | Company                      | Da            | te |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |
|  |                    |                                       |   |                  |                          |                              |               |    |  |  |  |

|                                  | Project Name: Westlake NGP                         | Project Number: 60335556                   | Client: Anadarko                       |
|----------------------------------|--|--|--|
| A=COM                            | Supervisor: Kurt Weber                             | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |
|                                  | THA Developed By: Dan Schillings                   |  | Date: November 2014 thru November 2015 |
| EMERGENCY RESPONSE PLAN          | N Task Name: Mob and Demob                         | Regularity of Task: One                    | e-time  Routine                        |
|                                  | Ch   | heck-in Procedures                         |  |
| Check-in Times                   | Check-in Person                                    | Phone Number                               | Cell Phone Number                      |
| 8:00 am & 5:00 pm                | Kurt Weber   | (903) 520-4408                             | (903) 283-1446                         |
| Alternate                        |  |  |  |
|                                  | Emergency (  | Coordinators / Key Personnel               |  |
| Name                             | Title  | Phone Number                               | Cell Phone Number                      |
| Kurt Webber                      | Training in First Aid / CPR                        | (903) 520-4408                             | (903) 283-1446                         |
| Kurt Webber                      | Project Manager                                    | (972) 735-7067                             | (972) 310-3729                         |
| Kurt Webber                      | Site Supervisor/Site Safety Officer                | (972) 735-7067                             | (972) 310-3729                         |
| Dan Schillings                   | Account SH&E Manager                               | (210) 253-7567                             | (210) 601-4129                         |
|                                  | Incident Reporting Line (BY THE END OF THE SHIFT)  |  |  |
| Ross Haeberle                    | Anadarko Petroleum Corporation Project Manager     | (936) 446-8430                             | (936) 446-8430                         |
| Eric Olson                       | DOT/IATA Shipping Expert                           | (864) 297-3102                             | (864) 918-2302                         |
|                                  |  |  |  |
|                                  |  |  |  |
|                                  | Emergency  | y Agencies / Public Utilities              |  |
| Name                             | Туре   | Details                                    | Phone Number                           |
| Maryneal, TX                     | Police   |  | 911                                    |
| Maryneal, TX                     | Fire   |  | 911                                    |
| Maryneal, TX                     | Ambulance  |  | 911                                    |
| Rolling Plains Memorial Hospital | Nearest Hospital / Clinic                          | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |
| Emergicare                       | Occupational Medical Facility                      | See Below                                  | (325) 795-1888                         |
|                                  | Poison Control Center                              |  | 800.222.1222                           |
|                                  | Pollution / Environmental                          |  | 800.292.4706                           |
|                                  | National Response Center                           |  | 800-424-8802                           |
|                                  | INFOTRAC (AECOM"s Account Number: 74984)           |  | 800-535-5053                           |
|                                  | Tier II or SARA Title III Hot Line                 |  | 800-424-9346                           |
|                                  | Common Ground Alliance Nationwide (CALL B 4 U Dig) |  | 811                                    |
|                                  |  |  |  |
|                                  | ncy Equipment & Supplies                           |  | ncy Plan Details                       |
| First Aid Kit - Type:            | Eye Wash   | Trifilo, Richard D, MD                     |  |
| Blankets / Survival:             | ☐ Spill Kit  | 1888 Antilley Road                         |  |
| Fire Extinguishers Type:         | Other:   | Abilene, Texas 79606                       |  |
| Communication Device             | _  | (325) 795-1888                             |  |
| Vehicle Safety Equipment         |  |  |  |



### This THA (worksheets 1 & 2) must be completed for all field work. Required for all projects/sites which do not have an existing Emergency contacts Summarize • Identify hazards emergency response plan controls Emergency Classify hazards Acknowledgement procedures • Identify controls / Sign off • Emergency equipment **EMERGENCY HAZARDS CONTROLS RESPONSE** Hazard Identification • Natural (biological) – bacteria, viruses, insects, plants, birds, and animals • Chemical – exposure to chemical toxins, acute or chronic, by way of inhalation, ingestion or absorption • Physical – slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting

#### **Hazard Classification**

• Psychosocial - stress, violence

- •Considers the potential severity of the outcome
- •Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

•Elimination (first) – choose a different process; modify an existing process; substitute with less hazardous substance

• Environmental – extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality

- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|   | Project Name: Westlake NGP   |          |            | Proje      | ct Number: 6033 | 5556   | Client: Anadarko           |             |             |    |
|---|--|----------|------------|------------|-----------------|--|----------------------------|-------------|-------------|----|
| AECOM   | Supervisor: Kurt Weber   |          |            | Proje      | ct Manager: Kur | t Webber   | Location: Maryneal,        | Texas       |             |    |
| 7 11 00711  | THA Developed By: Dan Schillings   |          |            |            |                 |  | Date: November 20          | )14 thru No | ovember 20° | 15 |
| TASK HAZARD ANALYSIS  | Task Name: Sampling of Unknowns and Liqu   | iids; c  | ontair     | ers/d      | rums/tanks      | Regularity of Tas                                  | k: One-time                |             | Routine     | <  |
|   |  | ŀ        |            |            | assification    |  |                            |             |             |    |
|   |  |          |            |            | iona ois y      |  |                            |             |             |    |
| Job Event Sequence  | Hazards   All   Al |          |            |            |                 | Controls   |                            |             |             |    |
| (List the major steps of the individual task)   | (List primary hazards)   | Severity | Likelihood | Risk Level | Classification  | (List co   | ontrols that AECOM will in | mplement)   |             |    |
| 1 Tail gate safety briefing, inspect equipment, buddy system  | None   | 1        | 1          | 1          | Low             | Standard PPE ensemble; tra                         |                            |             |             |    |
| 2 Review site-specific Emergency Action Plan and procedures   | None   | 1        | 1          | 1          | Low             | Standard PPE ensemble; tra                         |                            | ment        |             |    |
| 3 Identify activity to perform/lockout tagout appropriate system(s)   | Potential to break sample containers   | 2        | 1          | 2          | Low             | Standard PPE ensemble; tra                         |                            |             |             |    |
| 4 Don appropriate PPE and ensure adequate ventilation   | Potential for chemical exposure  | 1        | 1          | 1          | Low             | Standard PPE ensemble; tra                         |                            | otection    |             |    |
| 5 Consult chemist & safety professional for respiratory protection  | Being overcome by vapors   | 1        | 1          | 1          | Low             | Standard PPE ensemble; tra                         |                            |             |             |    |
| 6 Separate incompatables, immediately notify PM of bulging drums  | Chemical reactions, explosions   | 1        | 1          | 1          | Low             | Standard PPE ensemble; tra                         |                            |             | ng)         |    |
| 7 Open appropriate vessel and allow to ventilate for 15 minutes   | H2S, Oxygen, CO, LEL, PID  | 4        | 3          | 12         | Medium          | Standard PPE ensemble; tra                         |                            |             |             |    |
| 8 Measure/evaluate %LEL and VOCs  | H2S, Oxygen, CO, LEL, PID  | 4        | 3          | 12         | Medium          | Standard PPE ensemble; tra                         |                            |             |             |    |
| 9 Ensure secondary containment for items being removed  | H2S, Oxygen, CO, LEL, PID  | 4        | 3          | 12         | Medium          | Standard PPE ensemble; tra                         | ining, meters, equip       | ment        |             |    |
| 10 During all phases of container handling, be alert for new information  | H2S, Oxygen, CO, LEL, PID  | 1        | 1          | 1          | Low             | Standard PPE ensemble; tra                         | ining, meters, equip       | ment        |             |    |
| 11 Use caution when handling glass sampling devices, do not pry or push di  | H2S, Oxygen, CO, LEL, PID  | 1        | 1          | 1          | Low             | Standard PPE ensemble; training, meters, equipment |                            |             |             |    |
| 12 Ensure no spillage while sampling  | Slips/trips/falls, bio hzds, spills  | 1        | 1          | 1          | Low             | Standard PPE ensemble; tra                         | ining                      |             |             |    |
| 13 Inspect area/vehicles/vessels for leaks  | Slips/trips/falls, bio hzds  | 2        | 2          | 4          | Low             | Standard PPE ensemble; tra                         | ining, equipment           |             |             |    |
| 14 Site housekeeping  | Slips/trips/falls, bio hzds  | 2        | 2          | 4          | Low             | Standard PPE ensemble; tra                         | ining, equipment           |             |             |    |
| 15  |  |          |            |            |                 |  |                            |             |             |    |
| 16  |  |          |            |            |                 |  |                            |             |             |    |
| 17  |  |          |            |            |                 |  |                            |             |             |    |
| 18  |  |          |            |            |                 |  |                            |             |             |    |
|   | Hazard Classifi  | catio    | n Gui      | delin      | es              |  |                            |             |             |    |
| Severity  |  | L        | ikelih     | ood o      | Occurrence      | На   | azard Classification N     | Matrix      |             |    |
|   |  |          |            |            |                 |  |                            |             |             |    |
| 1 Remote potential for injury, property damage/\$ loss, or env damage   |  |          | 1 \        | /ery un    | likely          |  | Severity                   | _           |             |    |
| 2 Potential for minor first aid injury, property damage/\$ loss, or environmental                                     | damage   |          | 2 l        | Jnlikely   | ,               | 1 2  | 3 4 5                      | -           | Level       |    |
| 3 Potential for moderate personnel injuries, including medical treatment, prope                                       |  |          | 3 L        | ikely      |                 | 2 4<br>3 6<br>4 8                                  | 6 8 10                     |             | .OW         |    |
| public impact   | rg damage, v 1055, environmental damage, of flegative  |          | 4 \        | ery lik    | ely             | y Gelly  |                            |             | dium        |    |
| 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health |  |          |            | Certain    | -               | 当 4 8 12 16 20 High 5 10 15 20 25                  |                            |             |             |    |
| 5 Catastrophic damage to people, property/equipment, environment, or public   | health   |          |            |            |                 | Ri   | sk Level = Likelihood      | x Severity  | ,           |    |
|   |  |          |            |            |                 |  |                            |             |             |    |

|  | Project Name: Westlake NGP                      | Project Number: 60335556       | Client: Anad             | arko   |  |  |  |  |  |
|--|---|--------------------------------|--------------------------|--|--|--|--|--|--|
| AECOM  | Supervisor: Kurt Weber                          | Project Manager: Kurt Webber   | Location: Ma             | ryneal, Texas                                  |  |  |  |  |  |
| ALCOM  | THA Developed By: Dan Schillings                |                                | Date: Nover              | nber 2014 thru November                        | r 2015   |  |  |  |  |
| SUMMARY OF CONTROLS  | Task Name: Sampling of Unknowns and Liquids; of | containers/drums/tanks         | Regularity of Task       | : One-time                                     | Routine  |  |  |  |  |
| Personal Protective Equipment (check all that apply)           |   | Air Monitoring (re             | eference HASP monitoring |  |  |  |  |  |  |
| CSA/ANSI Safety-Toed Boots (Leather or Rubber)                 | No air monitoring required                      | 1                              |                          | Air monitoring required (see procedures below) |  |  |  |  |  |
| CSA/ANSI Safety Glasses or Goggles, Face Shield                | Parameter                                       | Location/Monitoring Interval   | Response/Action Levels   | Re   | esponse Activity   |  |  |  |  |
| CSA/ANSI-approved Hard Hat                                     | VOCs by PID                                     | BZ, 30 min                     | < 10 ppm                 |  | ing. If significant changes exist in this e SSO to investigate the potential for |  |  |  |  |
| Leather Gloves Hearing Protection                              | Oxygen  | BZ, 30 min                     | > 19.5 and 23.5 <        |  | ing. If significant changes exist in this e SSO to investigate the potential for |  |  |  |  |
| Nitrile Gloves for Sampling Respiratory Protection (full face) | LEL   | BZ, 30 min                     | < 10%                    |  | ing. If significant changes exist in this e SSO to investigate the potential for |  |  |  |  |
| Tyveks (splash resistant)                                      | veks (splash resistant) H2S                     |                                |                          | Continue work and monitor                      | ing. If significant changes exist in this e SSO to investigate the potential for |  |  |  |  |
| Required Training (associated with this THA)                   | Key SOPs (associat                              |                                | Client & Other Rec       | quirements                                     |  |  |  |  |  |
| 1 Tool specific training                                       | S3NA-305-PR Hand and Power Tools                |                                | Safeland Training        |  |  |  |  |  |  |
| 2 Equipment Specific   | S3NA-307-PR Housekeeping, Worksite              |                                |                          |  |  |  |  |  |  |
| 3 First Aid/CPR  | S3NA-308-PR Manual Lifting, Field               |                                |                          |  |  |  |  |  |  |
| 4 Respiratory Protection/Respirator Fit Test                   | S3NA-405-PR Drilling and Boring                 |                                |                          |  |  |  |  |  |  |
| 5  | S3NA-417-PR Utilities, Underground              |                                |                          |  |  |  |  |  |  |
|  |   |                                |                          |  |  |  |  |  |  |
| 6  | S3NA-520-PR Spill Response, Incidental          |                                |                          |  |  |  |  |  |  |
| 6  | S3NA-520-PR Spill Response, Incidental  Ackno   | wledgement / Signatures        |                          |  |  |  |  |  |  |
| 6 Project Manager / Supervisor (signature):                    |   | wledgement / Signatures  Date: |                          |  |  |  |  |  |  |
|  |   | , ,                            | Signature                | Company  | Date   |  |  |  |  |
| Project Manager / Supervisor (signature):                      | Ackno   | Date:                          | Signature                | Company  | Date   |  |  |  |  |
| Project Manager / Supervisor (signature):                      | Ackno   | Date:                          | Signature                | Company  | Date   |  |  |  |  |
| Project Manager / Supervisor (signature):                      | Ackno   | Date:                          | Signature                | Company  | Date   |  |  |  |  |
| Project Manager / Supervisor (signature):                      | Ackno   | Date:                          | Signature                | Company  | Date   |  |  |  |  |
| Project Manager / Supervisor (signature):                      | Ackno   | Date:                          | Signature                | Company  | Date   |  |  |  |  |
| Project Manager / Supervisor (signature):                      | Ackno   | Date:                          | Signature                | Company  | Date   |  |  |  |  |
| Project Manager / Supervisor (signature):                      | Ackno   | Date:                          | Signature                | Company  | Date   |  |  |  |  |

|                                       | Project Name: Westlake NGP  | Project Number: 60335556                   | Client: Anadarko                       |  |  |  |  |
|---------------------------------------|---|--|--|--|--|--|--|
| AECOM                                 | Supervisor: Kurt Weber  | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |  |  |  |  |
| ALCOM                                 | THA Developed By: Dan Schillings  |  | Date: November 2014 thru November 2015 |  |  |  |  |
| EMERGENCY RESPONSE PLAN               | Task Name: Sampling of Unknowns and Liquids; cont                           | ainers/drums/tanks Regularity of Task: Or  | ne-time  Routine                       |  |  |  |  |
|                                       | 1 3   | neck-in Procedures                         |  |  |  |  |  |
| Check-in Times                        | Check-in Person   | Phone Number                               | Cell Phone Number                      |  |  |  |  |
| 8:00 am & 5:00 pm                     | Kurt Weber  | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
| Alternate:                            |   |  |  |  |  |  |  |
|                                       |   | Coordinators / Key Personnel               |  |  |  |  |  |
| Name                                  | Title   | Phone Number                               | Cell Phone Number                      |  |  |  |  |
| Kurt Webber                           | Training in First Aid / CPR   | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
| Kurt Webber                           | Project Manager   | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
| Kurt Webber                           | Site Supervisor/Site Safety Officer   | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
| Dan Schillings                        | Account SH&E Manager  | (210) 253-7567                             | (210) 601-4129                         |  |  |  |  |
|                                       | Incident Reporting Line (BY THE END OF THE SHIFT)                           | 1.800.348.5046                             |  |  |  |  |  |
| Ross Haeberle                         | Anadarko Petroleum Corporation Project Manager                              | (936) 446-8430                             | (936) 446-8430                         |  |  |  |  |
| Eric Olson                            | DOT/IATA Shipping Expert  | (864) 297-3102                             | (864) 918-2302                         |  |  |  |  |
|                                       |   |  |  |  |  |  |  |
|                                       |   | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1      |  |  |  |  |  |
|                                       |   | y Agencies / Public Utilities              |  |  |  |  |  |
| Name                                  | Туре  | Details                                    | Phone Number                           |  |  |  |  |
| Maryneal, TX                          | Police  |  | 911                                    |  |  |  |  |
| Maryneal, TX                          | Fire  |  | 911                                    |  |  |  |  |
| Maryneal, TX                          | Ambulance   |  | 911                                    |  |  |  |  |
| Rolling Plains Memorial Hospital      | Nearest Hospital / Clinic   | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |  |  |  |  |
| Emergicare                            | Occupational Medical Facility   | See Below                                  | (325) 795-1888                         |  |  |  |  |
|                                       | Poison Control Center   |  | 800.222.1222                           |  |  |  |  |
|                                       | Pollution / Environmental   |  | 800.292.4706                           |  |  |  |  |
|                                       | National Response Center  |  | 800-424-8802<br>800-535-5053           |  |  |  |  |
|                                       | INFOTRAC (AECOM"s Account Number: 74984) Tier II or SARA Title III Hot Line |  |  |  |  |  |  |
|                                       |   |  | 800-424-9346                           |  |  |  |  |
|                                       | Common Ground Alliance Nationwide (CALL B 4 U Dig)                          |  | 811                                    |  |  |  |  |
| Fmergen                               | L<br>cy Equipment & Supplies  | Other Emerge                               | ency Plan Details                      |  |  |  |  |
| First Aid Kit - Type:                 | Eye Wash  | Trifilo, Richard D, MD                     |  |  |  |  |  |
| Blankets / Survival:                  | Spill Kit   | 1888 Antilley Road                         |  |  |  |  |  |
| Fire Extinguishers Type:              | Other:  | Abilene, Texas 79606                       |  |  |  |  |  |
| Communication Device                  |   | (325) 795-1888                             |  |  |  |  |  |
| ✓ Vehicle Safety Equipment            | •   | (3-2,                                      |  |  |  |  |  |
| · · · · · · · · · · · · · · · · · · · |   | · ·  |  |  |  |  |  |



### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off

**CONTROLS** 

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- •Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- •Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- Psychosocial stress, violence

### **Hazard Classification**

- •Considers the potential severity of the outcome
- Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

| Supervisor: Kurl Weber Project Manager: Kurl Webber Location: Maryneal, Toxas TASK HAZARD ANALYSIS Task Name: Scrabblings Task Name: Scrabbling Activities    Hazard Classification (Section Activities)   Hazard Classification (Hazard PPE ensemble: Training, equipment   Hazard Classification (Hazard PPE ensemble: Train     |   | Project Name: Westlake NGP                    |               |          | Proje     | ct Number: 6033  | Client: Anadarko                            | Client: Anadarko |  |  |  |  |
|--|---|---|---------------|----------|-----------|------------------|---|------------------|--|--|--|--|
| TASK HAZARD ANALYSIS  Task Name: Scabbling Activities  Regularity of Task: One-time Routine Routine Regularity of Task: One-time Routine Routine Regularity of Task: One-time Routine      | A=COM   | Supervisor: Kurt Weber                        |               |          | Proje     | ct Manager: Kurt | Webber Location: Maryneal, Texas            |                  |  |  |  |  |
| Hazard Classification (Job Event Sequence   Hazards   Job Event Sequence   Job Event       | 720771  | THA Developed By: Dan Schillings              |               |          |           |                  | Date: November 2014 thru November           | 2015             |  |  |  |  |
| Job Event Sequence  Hazards  (List primary hazards)  (List grimary hazard PPE ensemble: training, equipment)  (List grimary hazards)  (List grimary ha     | TASK HAZARD ANALYSIS  | Task Name: Scabbling Activities               |               |          |           |                  | Regularity of Task: One-time  Routine       | ~                |  |  |  |  |
| Tailgate Briefing and Inspect equipment   None   1   1   1   Low   Standard PPE ensemble: training equipment       |   |   |               |          |           |                  |   |                  |  |  |  |  |
| 1 Taligate Briefing and Inspect equipment None 1 1 1 1 Low Standard PPE ensemble: training equipment 3 Review work plan of area to be remediated None 1 1 1 1 Low Standard PPE ensemble: training, equipment 4 Establish Regulated Area/Barrier Tape/Warning Signs None 1 1 1 1 Low Standard PPE ensemble: training, equipment 5 Inspect and then don PPE None 1 1 1 Low Standard PPE ensemble: training, equipment 2 Low Standard PPE ensemble: training, equipment 3 Low March Institute Low Standard PPE ensemble: training, equipment 3 Low     |   |   |               | (<br>    | before d  | controls)        |   |                  |  |  |  |  |
| 1 Taligate Briefing and Inspect equipment None 1 1 1 1 Low Standard PPE ensemble: training equipment 3 Review work plan of area to be remediated None 1 1 1 1 Low Standard PPE ensemble: training, equipment 4 Establish Regulated Area/Barrier Tape/Warning Signs None 1 1 1 1 Low Standard PPE ensemble: training, equipment 5 Inspect and then don PPE None 1 1 1 Low Standard PPE ensemble: training, equipment 2 Low Standard PPE ensemble: training, equipment 3 Low March Institute Low Standard PPE ensemble: training, equipment 3 Low     | Job Event Sequence  | Hazards                                       | ity           |          |           |                  | Controls                                    |                  |  |  |  |  |
| 1 Taligate Briefing and Inspect equipment None 1 1 1 1 Low Standard PPE ensemble: training equipment 3 Review work plan of area to be remediated None 1 1 1 1 Low Standard PPE ensemble: training, equipment 4 Establish Regulated Area/Barrier Tape/Warning Signs None 1 1 1 1 Low Standard PPE ensemble: training, equipment 5 Inspect and then don PPE None 1 1 1 Low Standard PPE ensemble: training, equipment 2 Low Standard PPE ensemble: training, equipment 3 Low March Institute Low Standard PPE ensemble: training, equipment 3 Low     | ·   | (List primary hazards)                        | Hazard Hazard |          |           |                  | (List controls that AFCOM will implement)   |                  |  |  |  |  |
| 2 Go over equipment safety cards None 1 1 1 1 Low Standard PPE ensemble: training, equipment 3 Review work plan of area to be remediated None 1 1 1 1 Low Standard PPE ensemble: training, equipment 5 Inspect and then don PPE None 1 1 1 Low Standard PPE ensemble: training, equipment 6 Ensure HEPA vacuum is utilized for cleaning concrete areas. None 1 1 1 1 Low Standard PPE ensemble: training, equipment 7 Ensure HEPA vacuum is utilized for cleaning concrete areas. None 1 1 1 1 Low Standard PPE ensemble: training, equipment 8 Perform work as required Manual lifting 3 4 12 Medium Standard PPE ensemble: training, equipment 9 Observe for dust clouds (STOP if observed) Dust 10 Bag waste and continue to HEPA vacuum work area Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment 10 When finished bag HEPA filter, vac hoses, PPE into drums 11 When finished bag HEPA filter, vac hoses, PPE into drums 12 When finished bag HEPA filter, vac hoses, PPE into drums 13 Wige down all materials not being disposed of with welvipes Stips/firips/falls, bio hzds, sharp edges 2 3 6 Medium Standard PPE ensemble: training, equipment 14 Dispose of wipes in the 55 gal drums 15 Load out construction materials (except staging area for waste) Manual lifting 2 3 6 Medium Standard PPE ensemble: training, equipment 16 until lab result obtained for disposal) 17 End of the day housekeeping Slips/firips/falls, bio hzds, sharp edges 2 1 Very unlikely 2 Potential for moterate personnel injury, property damage's loss, or environmental damage 1 Very unlikely 2 Potential for moterate personnel injury, property damage's loss, or environmental damage 3 Needium 4 Potential for noderate personnel injurys, property damage's loss, or environmental damage 4 Potential for moterate personnel injurys, injury major property damage's loss, or environmental damage 5 Certain  1 Remote potential for moterate personnel injurys, injury major property damage's loss, serious impact to the environment, and public health  |   | , , , , ,                                     |               | _        |           |                  | , ,   |                  |  |  |  |  |
| Review work plan of area to be remediated  None  1 1 1 1 Low  Standard PPE ensemble: training, equipment  Low  Low  Standard PPE ensemble: training, equipment  Low  Standard PPE ensemble: training, equipment  Low  Low  Standard PPE ensemble: training, equipment  Low  Standard PPE ensemble: training, equipment  Low  Standard PPE ensemble: training, equipment  Low  Low  Low  Low  Standard PPE ensemble: training, equipment  Low  Low  Low  Standard PPE ensemble: training, equipment  Low  Low  Standard PPE ensemble: training, equipment  Low  Low  Low  Low  Low  Low  Low  Lo  | 0 0 1 11  |   |               |          |           | -                |   |                  |  |  |  |  |
| 4 Establish Regulated Area/Barrier Tape/Warning Signs None 1 1 1 1 Low Standard PPE ensemble: training, equipment 5 Inspect and then don PPE None 1 1 1 1 Low Standard PPE ensemble: training, equipment 6 Ensure HEPA vacuum is utilized for cleaning concrete areas. None 1 1 1 1 Low Standard PPE ensemble: training, equipment 7 Ensure Correct drums are obtained for disposal purposes Sharp edges 2 2 4 Low Standard PPE ensemble: training, equipment 8 Perform work as required Manual lifting 3 4 12 Medium Standard PPE ensemble: training, equipment 9 Observe for dust clouds (STOP if observed) Dust 2 3 6 Medium Standard PPE ensemble: training, equipment 10 Bag waste and continue to HEPA vacuum work area Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment 11 When bagging waste do so slowly and place in 55 gal drum Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment 12 When finished bag HEPA filter, vac hoses, PPE into drums Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment 13 Wipe down all materials not being disposed of with wet wipes Slips/trips/falls, bio hzds, sharp edges 2 3 6 Medium Standard PPE ensemble: training, equipment 14 Dispose of wipes in the 55 gal drums Slips/trips/falls, bio hzds, sharp edges 2 3 6 Medium Standard PPE ensemble: training, equipment 15 Load out construction materials (except staging area for waste Manual lifting Slips/trips/falls, bio hzds, sharp edges 2 2 4 Low Standard PPE ensemble: training, equipment 15 Load out construction materials (except staging area for waste Manual lifting Slips/trips/falls, bio hzds, sharp edges 2 2 4 Low Standard PPE ensemble: training, equipment 16 until lab result obtained for disposal) Slips/trips/falls, bio hzds, sharp edges 2 2 4 Low Standard PPE ensemble: training, equipment 16 until lab result obtained for disposal) Slips/trips/falls, bio hzds, sharp edges 2 2 2 4 Low Standard PPE ensemble: training, equipment 17 Very untilkely 1 2 3 6 9 12 15 15 10 10 10 10 10 10 10 10 10 10 10 10     | 1 ' '   |   | <u> </u>      |          |           |                  | 0 1 1                                       |                  |  |  |  |  |
| Sinspect and then don PPE  |   |   | <u> </u>      | <u> </u> | <u> </u>  |                  | 9   |                  |  |  |  |  |
| 6 Ensure HEPA vacuum is utilized for cleaning concrete areas. None 1 1 1 1 1 Low Standard PPE ensemble; training, equipment  7 Ensure correct drums are obtained for disposal purposes Sharp edges 2 2 4 Low Standard PPE ensemble; training, equipment  9 Observe for dust clouds (STOP if observed) Dust 2 3 6 Medium Standard PPE ensemble; training, equipment  10 Bag waste and continue to HEPA vacuum work area Pinch points, dusts 2 3 6 Medium Standard PPE ensemble; training, equipment  11 When bagging waste do so slowly and place in 55 gal drum Pinch points, dusts 2 3 6 Medium Standard PPE ensemble; training, equipment  12 When finished bag HEPA filter, vac hoses, PPE into drums  13 Wipe down all materials not being disposed of with wet wipes Slips/trips/falls, bio hzds, sharp edges 2 3 6 Medium Standard PPE ensemble; training, equipment  14 Dispose of wipes in the 55 gal drums Slips/trips/falls, bio hzds, sharp edges 2 3 6 Medium Standard PPE ensemble; training, equipment  15 Load out construction materials (except staging area for waste Manual lifting 2 3 6 Medium Standard PPE ensemble; training, equipment  16 until lab result obtained for disposal)  17 End of the day housekeeping Slips/trips/falls, bio hzds, sharp edges 2 2 4 Low Standard PPE ensemble; training, equipment  18 Likelihood of Occurrence  Hazard Classification Guidelines  1 Very unlikely 2 Potential for injury, property damage/\$ loss, or environmental damage 3 Likely 4 Potential for minor first aid injury, property damage/\$ loss, or environmental damage 4 Potential for minor first aid injury, property damage/\$ loss, or environmental damage 5 Certain  1 Very unlikely 4 Potential for aserious injury, major property damage/\$ loss, serious impact to the environment, and public health   |   |   | _             |          |           |                  | 9 1 1                                       |                  |  |  |  |  |
| 7 Ensure correct drums are obtained for disposal purposes Sharp edges 2 2 4 Low Standard PPE ensemble: training, equipment 8 Perform work as required Manual lifting 3 4 12 Medium Standard PPE ensemble: training, equipment 9 Observe for dust clouds (STOP if observed) Dust 2 3 6 Medium Standard PPE ensemble: training, equipment 10 Bag waste and continue to HEPA vacuum work area Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment 11 When bagging waste do so slowly and place in 55 gal drum Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment 12 When finished bag HEPA filter, vac hoses, PPE into drums Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment 13 Wipe down all materials not being disposed of with wet wipes Slips/trips/falls, bio hzds, sharp edges 2 3 6 Medium Standard PPE ensemble: training, equipment 14 Dispose of wipes in the 55 gal drums Slips/trips/falls, bio hzds, sharp edges 2 3 6 Medium Standard PPE ensemble: training, equipment 15 Load out construction materials (except staging area for waste Manual lifting Slips/trips/falls, bio hzds, sharp edges 2 2 4 Low Standard PPE ensemble: training, equipment 16 until lab result obtained for disposal) 17 End of the day housekeeping Slips/trips/falls, bio hzds, sharp edges 2 2 4 Low Standard PPE ensemble: training, equipment 18 Very unlikely 2 Unlikely 3 Likely 4 8 8 10 10 2 5 10 11 15 70 26  1 Remote potential for injury, property damage/\$ loss, or environmental damage or negative public impact 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health   | <b>'</b>  |   | <u> </u>      |          |           | -                | <u> </u>                                    |                  |  |  |  |  |
| 8 Perform work as required Manual lifting 3 4 4 12 Medium Standard PPE ensemble: training, equipment  9 Observe for dust clouds (STOP if observed) Dust 2 3 6 Medium Standard PPE ensemble: training, equipment  10 Bag waste and continue to HEPA vacuum work area Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment  11 When bagging waste do so slowly and place in 55 gal drum Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment  12 When finished bag HEPA filter, vac hoses, PPE into drums Pinch points, dusts 2 3 6 Medium Standard PPE ensemble: training, equipment  13 Wipe down all materials not being disposed of with wet wipes Slips/trips/falls, bio hzds, sharp edges 2 3 6 Medium Standard PPE ensemble: training, equipment  14 Dispose of wipes in the 55 gal drums Slips/trips/falls, bio hzds, sharp edges 2 3 6 Medium Standard PPE ensemble: training, equipment  15 Load out construction materials (except staging area for waste Manual lifting 2 3 6 Medium Standard PPE ensemble: training, equipment  16 until lab result obtained for disposal)  17 End of the day housekeeping Slips/trips/falls, bio hzds, sharp edges 2 2 4 Low Standard PPE ensemble: training, equipment  18 Very unlikely  1 Very unlikely  2 Potential for injury, property damage/\$ loss, or env damage  1 Very unlikely  3 Potential for injury, property damage/\$ loss, or env damage  4 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact  4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  1 Very unlikely  3 Certain  1 Very unlikely  4 Very likely  5 Cortain  1 Very unlikely  6 Slandard PPE ensemble: training, equipment  1 Very unlikely  1 Very unlikely  2 Unlikely  3 6 9 12 165  4 8 10 20  5 10 15 20 25  5 10 15 20 25  FRISK Level  Low  Medium  Standard PP | Ÿ   |   |               | _        |           | -                | 0 1 1                                       |                  |  |  |  |  |
| 9 Observe for dust clouds (STOP if observed) Dust 2 3 6 Medium Standard PPE ensemble; training, equipment  When bagging waste do so slowly and place in 55 gal drum Pinch points, dusts 2 3 6 Medium Standard PPE ensemble; training, equipment  When bagging waste do so slowly and place in 55 gal drum Pinch points, dusts 2 3 6 Medium Standard PPE ensemble; training, equipment      |   |   |               |          |           |                  |   |                  |  |  |  |  |
| 10 Bag waste and continue to HEPA vacuum work area   |   |   |               |          |           |                  |   |                  |  |  |  |  |
| 11 When bagging waste do so slowly and place in 55 gal drum   Pinch points, dusts   2   3   6   Medium   Standard PPE ensemble; training, equipment  | ·   |   |               |          |           |                  | • · · ·                                     |                  |  |  |  |  |
| 12 When finished bag HEPA filter, vac hoses, PPE into drums 13 Wipe down all materials not being disposed of with wet wipes 14 Dispose of wipes in the 55 gal drums 15 Load out construction materials (except staging area for waste until lab result obtained for disposal) 16 until lab result obtained for disposal) 17 End of the day housekeeping  Severity  Likelihood of Occurrence  Hazard Classification Guidelines  Severity  Likelihood of Occurrence  Hazard Classification Matrix  1 Remote potential for injury, property damage/\$ loss, or environmental damage 2 Potential for minor first aid injury, property damage/\$ loss, or environmental damage 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, serious impact to the environment, and public health  Pinch points, dusts 2 3 6 Medium Standard PPE ensemble; training, equipment  Likelihood of Occurrence  Hazard Classification Matrix  1 Very unlikely 2 Unlikely 3 Likely 4 Very likely 5 Certain  Risk Level Low Medium High Hazard Classification Matrix  Pinch points, dusts  Standard PPE ensemble; training, equipment  Hazard Classification Matrix  Risk Level Low Medium High Hazard Classification Matrix  Pinch points, dusts as 6 Medium Standard PPE ensemble; training, equipment  Hazard Classification Guidelines  Likelihood of Occurrence  Hazard Classification Matrix  1 Very unlikely 2 Unlikely 3 Likely 4 Very likely 5 Certain  Fisk Level Low Medium High Hazard Classification Matrix  Pinch points, dust as 6 Medium Standard PPE ensemble; training, equipment  Hazard Classification Matrix  Fisk Level Low Medium High Hazard Classification Matrix   | 3   | •   |               |          |           |                  | 0 1 1                                       |                  |  |  |  |  |
| 13   Wipe down all materials not being disposed of with wet wipes   Slips/trips/falls, bio hzds, sharp edges   2   3   6   Medium   Standard PPE ensemble; training, equipment   |   |   | _             |          |           |                  | 9   |                  |  |  |  |  |
| 14   Dispose of wipes in the 55 gal drums   Slips/trips/falls, bio hzds, sharp edges   2   3   6   Medium   Standard PPE ensemble; training, equipment   | <u> </u>  | •   |               |          | _         |                  | 0 1 1                                       |                  |  |  |  |  |
| 15 Load out construction materials (except staging area for waste  | · · · · · · · · · · · · · · · · · · ·   |   | _             |          | _         |                  | 0 1 1                                       |                  |  |  |  |  |
| The contract of the day housekeeping   Slips/trips/falls, bio hzds, sharp edges   2   2   4   Low   Standard PPE ensemble; training, equipment   | • • • •   |   |               |          |           |                  | 0 1 1                                       |                  |  |  |  |  |
| Slips/trips/falls, bio hzds, sharp edges   2   2   4   Low   Standard PPE ensemble; training, equipment  | . 1 0 0   | Manual lifting                                |               | 3        | 6         | Medium           | Standard PPE ensemble; training, equipment  |                  |  |  |  |  |
| Hazard Classification Guidelines  Severity  Likelihood of Occurrence  Hazard Classification Matrix  1 Remote potential for injury, property damage/\$ loss, or env damage 2 Potential for minor first aid injury, property damage/\$ loss, or environmental damage 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  Hazard Classification Matrix  Severity  1 Very unlikely 2 Unlikely 3 Likely 4 Very likely 5 Certain  Risk Level Low Medium High   | 1 ,   | Clina/tuina/falla hia hada ahaya adasa        | _             | _        |           | 1                | Chandard DDF analyshia training a suingeaut |                  |  |  |  |  |
| Severity  1 Remote potential for injury, property damage/\$ loss, or env damage 2 Potential for minor first aid injury, property damage/\$ loss, or environmental damage 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  Likelihood of Occurrence  Hazard Classification Matrix  Severity  1 Very unlikely 2 Unlikely 3 Likely 4 Very likely 5 Certain  Risk Level Low Medium High   | 17 End of the day nousekeeping  | 1 1   |               |          |           | _                | Standard PPE ensemble; training, equipment  |                  |  |  |  |  |
| 1 Remote potential for injury, property damage/\$ loss, or env damage 2 Potential for minor first aid injury, property damage/\$ loss, or environmental damage 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  1 Very unlikely 2 Unlikely 3 Likely 4 Very likely 5 Certain  Risk Level Low Medium High   | Coverity  | Hazard Clas                                   | _             |          |           |                  | Hazard Classification Matrix                |                  |  |  |  |  |
| 1 Remote potential for injury, property damage/\$ loss, or env damage 2 Potential for minor first aid injury, property damage/\$ loss, or environmental damage 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  Risk Level  2 Unlikely 3 Likely 4 Very likely 5 Certain  Risk Level  Low Medium High  | Severity  |   | l '           | rikeiiii | ioou oi   | Occurrence       | Hazaru Ciassilication Matrix                |                  |  |  |  |  |
| 1 Remote potential for injury, property damage/\$ loss, or env damage 2 Potential for minor first aid injury, property damage/\$ loss, or environmental damage 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  Risk Level  2 Unlikely 3 Likely 4 Very likely 5 Certain  Risk Level  Low Medium High  |   |   |               |          |           |                  | Severity                                    |                  |  |  |  |  |
| 2 Potential for minor lirst aid injury, property damage/s loss, or environmental damage or negative public impact  4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  2 Uninkely  3 Likely  4 Very likely  5 Certain  1 Certain  2 4 6 8 10  3 6 9 12 15  4 8 12 16 20  5 10 15 20 25  | 1 Remote potential for injury, property damage/\$ loss, or env damage             |   |               |          | ,         | ,                |   |                  |  |  |  |  |
| 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact  4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  3 Likely 4 Very likely 5 Certain  4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health   | 2 Potential for minor first aid injury, property damage/\$ loss, or environmental | damage  |               |          | ,         |                  |   |                  |  |  |  |  |
| 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  | ,   | erty damage/\$ loss, environmental damage, or |               |          | ,         |                  | 9 3 6 9 12 15 Medium                        |                  |  |  |  |  |
| 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health  | negative public impact  |   |               | 4 \      | Very like | ely              | 9 4 8 12 16 20 High                         |                  |  |  |  |  |
| 5 Catastrophic damage to people, property/equipment, environment, or public health   | 4 Potential for a serious injury, major property damage/\$ loss, serious impact t | o the environment, and public health          |               | 5 (      | Certain   |                  |   |                  |  |  |  |  |
|  | 5 Catastrophic damage to people, property/equipment, environment, or public       | health  |               |          |           |                  | Risk Level = Likelihood x Severity          |                  |  |  |  |  |

| Supervisor: Kurt Wober   Project Manager: Kurt Webber   Date: Movember 701 thru November 701 thru Nove |                           |                                | Project Name: We   | stlake NGP                   | Project Number: 60335556     |         | Client: Anadar    | ko              |        |             |   |  |  |
|--|---------------------------|--------------------------------|--------------------|------------------------------|------------------------------|---------|-------------------|-----------------|--------|-------------|---|--|--|
| SUMMARY OF CONTROLS  Task Name: Scabbling Activities  Regularly of Task: One-time Routine Rout | $\Delta = C$              | OM                             | Supervisor: Kurt V | Veber                        | Project Manager: Kurt Webber |         | Location: Mary    | neal, Texas     |        |             |   |  |  |
| Personal Protective Equipment (check all that apply)  CSA/ANSI Safety-Toed Boots (Leather or Rubber) CSA/ANSI Safety-Toed Boots (Leather or Rubber) CSA/ANSI Safety Glasses or Goggles CSA/ANSI Safety Glasses or Goggles CSA/ANSI Type II/III Reflective Traffic Safety Vest Leather Gloves Leather Gloves Hearing Protection (where required) CSA/ANSI Type II/III Reflective Traffic Safety Vest Leather Gloves Response Activity CSA/ANSI Type II/III Reflective Traffic Safety Vest Leather Gloves Response Activity CSA/ANSI Type II/III Reflective Traffic Safety Vest Leather Gloves Response Activity CSA/ANSI Type II/III Reflective Traffic Safety Vest Leather Gloves Response Activity CSA/ANSI Type II/III Reflective Traffic Safety Vest Leather Gloves Response Activity CSA/ANSI Type II/III Reflective Traffic Safety Vest Leather Gloves Response Activity Response Act |                           |                                | THA Developed By   | y: Dan Schillings            |                              |         | Date: Novemb      | er 2014 thru No | vember | 2015        |   |  |  |
| CSA/ANSI Safety-Toed Boots (Leather or Rubber) CSA/ANSI Safety Glasses or Goggles CSA/ANSI Safety Glasses or Goggles CSA/ANSI Safety Glasses or Goggles CSA/ANSI Type II/III Reflective Traffic Safety Vest CSA/ANSI Type II/III Reflective Traffic Safety Vest CSA/ANSI Type II/III Reflective Traffic Safety Vest Leather Gloves Leather Gloves Hearing Protection (where required) CSA/ANSI Type II/III Reflective Traffic Safety Vest Response Activity CSA/ANSI Type II/III Reflective Traffic Safety Vest Required Training (associated with this THA) CSA/ANSI Type II/III Reflective Traffic Safety Vest Required Training (associated with this THA) CSA/ANSI Type II/III Reflective Traffic Safety Vest Required Training (associated with this THA) CSA/ANSI Type II/III Reflective Traffic Safety Vest Required Training (associated with this THA) CSA/ANSI Type II/III Reflective Traffic Safety Vest Response Activity Response A | SUMMAR                    | OF CONTROLS                    | Task Name: Scal    | obling Activities            |                              | Re      | gularity of Task: | One-time        |        | Routine     | V |  |  |
| CSA/ANSI Safety Glasses or Goggles  CSA/ANSI Type I/IIII Reflective Traffic Safety Vest  Leather Gloves  Hearing Protection (where required)  CSA/ANSI Type I/IIII Reflective Traffic Safety Vest  Hearing Protection (where required)  CSA/ANSI Type I/IIII Reflective Traffic Safety Vest  Hearing Protection (where required)  CSA/ANSI Type I/IIII Reflective Traffic Safety Vest  Hearing Protection (where required)  CSA/ANSI Type I/IIII Reflective Traffic Safety Vest  Hearing Protection (where required)  CSA/ANSI Type I/IIII Reflective Traffic Safety Vest  Hearing Protection (where required)  CSA/ANSI Type I/IIII Reflective Traffic Safety Vest  Hearing Protection (where required)  CSA/ANSI Type I/IIII Reflective Traffic Safety Vest  Response/Action Levels  Req |                           |                                |                    |                              | Air Monitoring (refere       |         |                   |                 |        |             |   |  |  |
| ✓ CSA/ANSI-approved Hard Hat       ✓ CSA/ANSI Type II/III Reflective Traffic Safety Vest       ✓ Leather Gloves       ✓ Leather Gloves       ✓ CSA/ANSI Type II/III Reflective Traffic Safety Vest       ✓ CSA/ANSI Type II/III Type II/III Type II/II   |                           |                                | <b>&gt;</b>        | rec an incincorning required |                              |         |                   |                 |        |             |   |  |  |
| SA/ANSI Type II/III Reflective Traffic Safety Vest   Leather Gloves   Leather Gloves   Hearing Protection (where required)   |                           |                                |                    | Parameter                    | Location/Monitoring Interval | Respons | e/Action Levels   |                 | Respor | se Activity |   |  |  |
| Leather Gloves   Hearing Protection (where required)   | _ '                       |                                | _                  |                              |                              |         |                   |                 |        |             |   |  |  |
| Wearing Protection (where required)       Hearing Protection (where required)       Collect & Other Requirements         Required Training (associated with this THA)       Key SOPs (associated with this THA)       Client & Other Requirements         1 Tool specific training       S3NA-305-PR Hand and Power Tools       Safeland Training         2 Equipment specific       S3NA-411-PR Machine Guarding       Sank-411-PR Machine Guarding         3 Hazardous noise       S3NA-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy Equipment         5       Sank-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy Equipment         5       Sank-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy Equipment         5       Sank-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy Equipment         5       Sank-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy Equipment         5       Sank-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy Equipment         5       Sank-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy Equipment         6       Sank-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy Equipment         7       Sank-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy Equipment         8       Sank-309-PR Mobile or Heavy Equipment       Sank-309-PR Mobile or Heavy E   |                           | Reflective Traffic Safety Vest |                    |                              |                              |         |                   |                 |        |             |   |  |  |
| Required Training (associated with this THA)    Safeland Training (associated with this THA)   Safeland Training (associated with this THA)   Safeland Training (associated with this THA)   Tool specific training   S3NA-305-PR Hand and Power Tools   Safeland Training   | Location Cloves           |                                | _                  |                              |                              |         |                   |                 |        |             |   |  |  |
| 1 Tool specific training 2 Equipment specific 3 Hazardous noise 4 S3NA-308-PR Manual Lifting, Field 5 S3NA-309-PR Mobile or Heavy Equipment 5 6 S1NA-309-PR Mobile or Heavy Equipment 6 Date:  Acknowledgement / Signatures  Date:   | Hearing Protection (w     | /here required)                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
| 1 Tool specific training 2 Equipment specific 3 Hazardous noise 4 S3NA-308-PR Manual Lifting, Field 5 S3NA-309-PR Mobile or Heavy Equipment 5 6 S1NA-309-PR Mobile or Heavy Equipment 6 Date:  Acknowledgement / Signatures  Date:   |                           |                                | =                  |                              |                              |         |                   |                 |        |             |   |  |  |
| 1 Tool specific training 2 Equipment specific 3 Hazardous noise 4 S3NA-308-PR Manual Lifting, Field 5 S3NA-309-PR Mobile or Heavy Equipment 5 6 S1NA-309-PR Mobile or Heavy Equipment 6 Date:  Acknowledgement / Signatures  Date:   | <u> </u>                  |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
| 1 Tool specific training 2 Equipment specific 3 Hazardous noise 4 S3NA-308-PR Manual Lifting, Field 5 S3NA-309-PR Mobile or Heavy Equipment 5 6 S1NA-309-PR Mobile or Heavy Equipment 6 Date:  Acknowledgement / Signatures  Date:   | <u> </u>                  |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
| 1 Tool specific training 2 Equipment specific 3 Hazardous noise 4 S3NA-308-PR Manual Lifting, Field 5 S3NA-309-PR Mobile or Heavy Equipment 5 6 S1NA-309-PR Mobile or Heavy Equipment 6 Date:  Acknowledgement / Signatures  Date:   | Ц                         |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
| 2 Equipment specific S3NA-411-PR Machine Guarding S3NA-308-PR Manual Lifting, Field S3NA-309-PR Mobile or Heavy Equipment S3NA-309-PR Mobile or He | Required Training         | (associated with this THA)     |                    | Key SOPs (associat           | ed with this THA)            |         | C                 | lient & Other R | equire | ments       |   |  |  |
| 2 Equipment specific S3NA-411-PR Machine Guarding S3NA-308-PR Manual Lifting, Field S3NA-309-PR Mobile or Heavy Equipment S3NA-309-PR Mobile or He | 1 Tool specific training  |                                | S3NA-305-PR Har    | nd and Power Tools           |                              | Safe    | eland Training    |                 |        |             |   |  |  |
| 4 S3NA-309-PR Mobile or Heavy Equipment 5 6 6 CONTRACT SIGNATURES  Project Manager / Supervisor (signature): Date:   |                           |                                | S3NA-411-PR Mad    | chine Guarding               |                              |         |                   |                 |        |             |   |  |  |
| 4 S3NA-309-PR Mobile or Heavy Equipment 5 6 6 CONTRACT SIGNATURES  Project Manager / Supervisor (signature): Date:   |                           |                                | S3NA-308-PR Mai    | nual Lifting, Field          |                              |         |                   |                 |        |             |   |  |  |
| 5 6 Acknowledgement / Signatures Project Manager / Supervisor (signature): Date:   |                           |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
| Acknowledgement / Signatures  Project Manager / Supervisor (signature):  Date:   | 5                         |                                |                    | <i>y</i> 11                  |                              |         |                   |                 |        |             |   |  |  |
| Project Manager / Supervisor (signature):  Date:   | 6                         |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
| Project Manager / Supervisor (signature):  Date:   |                           |                                | •                  | Acknowled                    | gement / Signatures          |         |                   |                 |        |             |   |  |  |
| Name     Signature     Company     Date     Name     Signature     Company     Date       Image: Company or   | Project Manager / Supervi | isor (signature):              |                    |                              | Date:                        |         |                   |                 |        |             |   |  |  |
|  | Name                      | Signature                      | Company            | Date                         | Name                         |         | Signature         | Compa           | ny     | Date        | е |  |  |
| Image: Control of the control of th                                |                           |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
| Image: Control of the contro                        |                           |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
|  |                           |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
|  |                           |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
|  |                           |                                |                    |                              |                              |         |                   |                 |        |             |   |  |  |
|  |                           |                                | †                  |                              |                              |         |                   |                 |        |             |   |  |  |
|  |                           |                                |                    |                              |                              | +       |                   |                 |        |             |   |  |  |
|  |                           |                                |                    |                              |                              | +       |                   |                 |        |             |   |  |  |

|                                  | Project Name: Westlake NGP                         | Project Number: 60335556                   | Client: Anadarko                       |
|----------------------------------|--|--|--|
| A=COM                            | Supervisor: Kurt Weber                             | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |
|                                  | THA Developed By: Dan Schillings                   |  | Date: November 2014 thru November 2015 |
| EMERGENCY RESPONSE PLAN          | Task Name: Scabbling Activities                    | Regularity of Task: One                    | -time  Routine                         |
|                                  | Ch   | neck-in Procedures                         |  |
| Check-in Times                   | Check-in Person                                    | Phone Number                               | Cell Phone Number                      |
| 8:00 am & 5:00 pm                | Kurt Weber   | (903) 520-4408                             | (903) 283-1446                         |
| Alternate:                       |  |  |  |
|                                  | Emergency (  | Coordinators / Key Personnel               |  |
| Name                             | Title  | Phone Number                               | Cell Phone Number                      |
|                                  | Training in First Aid / CPR                        | (903) 520-4408                             | (903) 283-1446                         |
| Kurt Webber                      | Project Manager                                    | (972) 735-7067                             | (972) 310-3729                         |
| Kurt Webber                      | Site Supervisor/Site Safety Officer                | (972) 735-7067                             | (972) 310-3729                         |
|                                  | Account SH&E Manager                               | (210) 253-7567                             | (210) 601-4129                         |
|                                  | Incident Reporting Line (BY THE END OF THE SHIFT)  | 1.800.348.5046                             |  |
|                                  | Anadarko Petroleum Corporation Project Manager     | (936) 446-8430                             | (936) 446-8430                         |
| Eric Olson                       | DOT/IATA Shipping Expert                           | (864) 297-3102                             | (864) 918-2302                         |
|                                  |  |  |  |
|                                  |  |  |  |
|                                  | Emergency  | Agencies / Public Utilities                |  |
| Name                             | Туре   | Details                                    | Phone Number                           |
| Maryneal, TX                     | Police   |  | 911                                    |
|                                  | Fire   |  | 911                                    |
|                                  | Ambulance  |  | 911                                    |
| Rolling Plains Memorial Hospital | Nearest Hospital / Clinic                          | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |
|                                  | Occupational Medical Facility                      | See Below                                  | (325) 795-1888                         |
|                                  | Poison Control Center                              |  | 800.222.1222                           |
|                                  | Pollution / Environmental                          |  | 800.292.4706                           |
|                                  | National Response Center                           |  | 800-424-8802                           |
|                                  | INFOTRAC (AECOM"s Account Number: 74984)           |  | 800-535-5053                           |
|                                  | Tier II or SARA Title III Hot Line                 |  | 800-424-9346                           |
|                                  | Common Ground Alliance Nationwide (CALL B 4 U Dig) |  | 811                                    |
|                                  |  |  |  |
|                                  | y Equipment & Supplies                             |  | ncy Plan Details                       |
| First Aid Kit - Type:            | Eye Wash   | Trifilo, Richard D, MD                     |  |
| Blankets / Survival:             | Spill Kit  | 1888 Antilley Road                         |  |
| Fire Extinguishers Type:         | Other:   | Abilene, Texas 79606                       |  |
| Communication Device             |  | (325) 795-1888                             |  |
| ✓ Vehicle Safety Equipment       |  |  |  |



### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off

**CONTROLS** 

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- •Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- •Psychosocial stress, violence

### Hazard Classification

- •Considers the potential severity of the outcome
- Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

| Project Name: Westlake NGP  |   |   |  | Project Number: 603 |            |                  | 5556   | Client: Anadarko   |            |        |  |  |
|---|---|---|--|---------------------|------------|------------------|--|--|------------|--------|--|--|
|   | AECOM   | Supervisor: Kurt Weber                      |  |                     |            | ct Manager: Kurt | Webber                                       | Location: Maryneal, Texas  |            |        |  |  |
|   | 71207/1   | THA Developed By: Dan Schillings            |  |                     |            |                  | Date: November 2014 thru November 201        |  |            | r 2015 |  |  |
|   | TASK HAZARD ANALYSIS                                  | Task Name: Soil Removal Operations          |  |                     |            |                  | Regularity of Tas                            | k: One-time  | ☐ Routine  | <      |  |  |
|   |   |   | Hazard Classification (before controls)                      |                     |            |                  |  |  |            |        |  |  |
|   |   |   |  |                     |            |                  |  |  |            |        |  |  |
|   | Job Event Sequence                                    | Hazards                                     | rity   | Likelihood          | Risk Level | Hazard           | Controls                                     |  |            |        |  |  |
|   | (List the major steps of the individual task)         | (List primary hazards)                      | Severity   | Likeli              | Risk       | Classification   | (List c                                      | controls that AECOM will im  | pplement)  |        |  |  |
|   | Conduct tailgate safety meeting.                      | Slips, trips, and falls.                    | 1  | 2                   | 2          | Low              | Standard PPE ensemble; tra                   | •  |            |        |  |  |
|   | Verify locations/anomalies for excavation/removal     | Excavation collapse/cave in                 | 2  | 2                   | 4          | Low              | Standard PPE ensemble; tra                   | 3  |            |        |  |  |
| 3   | Verify subsurface utility clearances                  | None  | 1  | 2                   | 2          | Low              | Standard PPE ensemble; training              |  |            |        |  |  |
| 4   | Conduct preop inspection of equipment to be used      | Slips,trips,falls,cuts,lifting,pinch points | 3  | 3                   | 9          | Medium           | Standard PPE ensemble; training, equipment   |  |            |        |  |  |
| 5   | Correct any deficiencies identified in the inspection | Slips,trips,falls,cuts,lifting,pinch points | 3  | 3                   | 9          | Medium           | Standard PPE ensemble; training, equipment   |  |            |        |  |  |
| 6   | Inspect PPE   | None  | 1  | 1                   | 1          | Low              | Standard PPE ensemble; tra                   | ining  |            |        |  |  |
| 7   | Don appropriate PPE                                   | None  | 1  | 1                   | 1          | Low              | Standard PPE ensemble; training              |  |            |        |  |  |
| 8   | Position equipment in intended position               | Slips,trips,falls, biological, noise        | s, biological, noise 3 4 12 Medium Standard PPE ensemble; tr |                     |            |                  | aining, equipment                            |  |            |        |  |  |
| 9   | Initiate removal of soil                              | Slips,trips,falls, biological, noise        | 3  | 4                   | 12         | Medium           | Standard PPE ensemble; training, equipment   |  |            |        |  |  |
| 10  | Utilize wet method to reduce airborne particulates    | Dusts                                       | 2  | 2                   | 4          | Low              | Standard PPE ensemble; tra                   |  |            |        |  |  |
|   | Clean equipment at the end of the day                 | Slips,trips,falls, biological, noise, cuts  | 2  | 2                   | 4          | Low              | Standard PPE ensemble; tra                   |  |            |        |  |  |
| 12  | Collect IDW and non-IDW waste daily                   | Slips,trips,falls, biological               | 2  | 2                   | 4          | Low              | Standard PPE ensemble; training, equipment   |  |            |        |  |  |
| 13  | Daily housekeeping around the site                    | Slips,trips,falls, biological               | 1  | 1                   | 1          | Low              | Standard PPE ensemble; training              |  |            |        |  |  |
| 14  | , ,   |   |  |                     |            |                  |  |  |            |        |  |  |
| 15  |   |   |  |                     | 0          |                  |  |  |            |        |  |  |
| 16  |   |   |  |                     | 0          |                  |  |  |            |        |  |  |
| 17  |   |   |  |                     | 0          |                  |  |  |            |        |  |  |
|   |   | Hazard C                                    | Classi   | ficatio             | on Gu      | idelines         |  |  |            |        |  |  |
| Severity  |   |   |  |                     | ood o      | Occurrence       | Н  | Hazard Classification Matrix   |            |        |  |  |
|   |   |   |  |                     |            |                  | 2  | 34   |            |        |  |  |
| Remote potential for injury, property damage/\$ loss, or env damage   |   |   | 1 Very unlikely  |                     |            |                  | Severity                                     |  |            |        |  |  |
| Remote potential for injury, property damage/\$ loss, or environmental damage  2 Potential for minor first aid injury, property damage/\$ loss, or environmental damage |   |   | 2 Unlikely   |                     |            |                  | 1 2  | The second secon | Risk Level |        |  |  |
|   |   |   | 3 Likely   |                     |            |                  | p 2 4  |  | Low        |        |  |  |
| 3 Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact                      |   |   | 4 Very likely  |                     |            |                  | 2 4 6 8 10 Low 3 6 9 12 15 4 8 12 16 20 High |  |            |        |  |  |
|   |   |   | 5 Certain  |                     |            |                  |  |  |            |        |  |  |
| 4 Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health   |   |   |  | 5 10 15 20 25       |            |                  |  |  | 311        |        |  |  |
| 5 Catastrophic damage to people, property/equipment, environment, or public health  |   |   |  |                     |            |                  | Risk Level = Likelihood x Severity           |  |            |        |  |  |

|                              |  | Project Name: Westlake NGP  |                            | Project Number: 60335556                     | Client: Anadarko                      |   |   |   |             |         |  |
|------------------------------|--|---|----------------------------|--|---------------------------------------|---|---|---|-------------|---------|--|
| AEC                          | COM  | Supervisor: Kurt Weber Project Manager: Kurt Webber                         |                            |  |                                       | Location: Maryneal, Texas   |   |   |             |         |  |
|                              |  | THA Developed By  | y: Dan Schillings          | Date: Novembe                                | ate: November 2014 thru November 2015 |   |   |   |             |         |  |
| SUMMARY                      | OF CONTROLS  | Task Name: Soil Removal Operations Regularity of Task: One-time   ✓ Routine |                            |  |                                       |   |   |   |             |         |  |
| Personal Protective Equi     | ipment (check all that apply)  |   |                            | Air Monitoring (refere                       |                                       | monitoring plan)  |   |   |             |         |  |
|                              | ed Boots (Leather or Rubber)   |   | No air monitoring required |  | <b>☑</b> Air                          | ir monitoring required (see procedures below)   |   |   |             |         |  |
| CSA/ANSI Safety Gla          |  |   | Parameter                  | Location/Monitoring Interval                 | Respons                               | onse/Action Levels Response Activity  |   |   | se Activity |         |  |
| CSA/ANSI-approved I          | Hard Hat   | VOCs by PID and H2S   |                            | BZ, 30 min                                   |                                       |   | Continue work and monitoring. If significant changes exist in this acceptable range, contact the SSO to investigate the potential for contributing factors. |   |             |         |  |
|                              | Reflective Traffic Safety Vest   |   |                            |  |                                       | * F F   |   |   |             |         |  |
| Leather Gloves               |  | Oxygen  |                            | BZ, 30 min >                                 |                                       |   | Continue work and monitoring. If significant changes  |   |             |         |  |
| Hearing Protection (w        | here required)   |   |                            |  |                                       |   | exist in this acceptable range, contact the SSO to investigate the potential for contributing factors.  |   |             |         |  |
|                              |  | 1   |                            | BZ, 30 min                                   |                                       |   | Continue work and monitoring. If significant changes  |   |             | changes |  |
|                              | _'   |   | LEL                        |  |                                       |   | exist in this acceptable range, contact the SSO to investigate the potential for contributing factors.  |   |             |         |  |
|                              |  |   |                            |  |                                       |   | Upgrade to Level C, Implement dust suppression  |   |             |         |  |
|                              |  |   | Aerosols                   | BZ & EZ, 30 min                              | >05-10 mg/m <sup>3</sup> or 2.5@EZ    |   | measures; contact the SSO & SP  |   |             |         |  |
| Required Training            | (associated with this THA)   | Key SOPs (associated with this THA)   |                            |  |                                       | Client & Other Requirements   |   |   |             |         |  |
| 1 Field Safety               |  | S3NA-303-PR Exc   | avation and Trenching      | control of the floating consolvation frogram |                                       | ubcontractor is to provide the OSHA Competent Person for Excavation   |   |   |             |         |  |
| 2 General Excavation S       | afety  | S3NA-309-PR Mobile or Heavy Equipment                                       |                            |  |                                       | and provide proper documentation to AECOM prior to start of site work.  Daily inspection form to be completed by Competent Person as well.  Safeland Training |   |   |             |         |  |
| 3 Trench/Excavation Sa       | nfety  | S3NA-307-PR Housekeeping, Worksite  |                            | CONIA 61 / DD Dadiation Non Ionizing         |                                       |   |   |   |             |         |  |
| 4 Hearing Protection         |  | S3NA-312-PR Stairways and Ladders   |                            |  |                                       |   |   |   |             |         |  |
| 5 Biological Hazards         |  | S3NA-406-PR Electrical Lines, Overhead                                      |                            |  |                                       |   |   |   |             |         |  |
| 6 First Aid/CPR              |  | S3NA-417-PR Utilities, Underground  |                            |  |                                       |   |   |   |             |         |  |
| Acknowledgement / Signatures |  |   |                            |  |                                       |   |   |   |             |         |  |
| Project Manager / Supervi    | sor (signature):   |   |                            | Date:  |                                       |   |   |   |             |         |  |
| Name                         | Signature  | Company   | Date                       | Name   |                                       | Signature   | Company   | / | Date        | е       |  |
|                              | , and the second |   |                            |  |                                       | - V   |   |   |             |         |  |
|                              |  |   |                            |  |                                       |   |   |   |             |         |  |
|                              |  |   |                            |  |                                       |   |   |   |             |         |  |
|                              |  |   |                            |  |                                       |   |   |   |             |         |  |
|                              |  |   |                            |  |                                       |   |   |   |             |         |  |
|                              |  |   |                            |  |                                       |   |   |   |             |         |  |
|                              |  |   |                            |  |                                       |   |   |   |             |         |  |
|                              |  |   |                            |  |                                       |   |   |   |             |         |  |

| 4 = 20 14   | Project Name: Westlake NGP                          | Project Number: 60335556                            | Client: Anadarko                       |  |  |  |  |
|---|---|---|--|--|--|--|--|
| A=COM   | Supervisor: Kurt Weber                              | Supervisor: Kurt Weber Project Manager: Kurt Webber |  |  |  |  |  |
|   | THA Developed By: Dan Schillings                    |   | Date: November 2014 thru November 2015 |  |  |  |  |
| EMERGENCY RESPONSE PLAN                             | Task Name: Soil Removal Operations                  | Regularity of Task: On                              | ne-time 🔽 Routine                      |  |  |  |  |
|   | (   | Check-in Procedures                                 |  |  |  |  |  |
| Check-in Times                                      | Check-in Person                                     | Phone Number  | Cell Phone Number                      |  |  |  |  |
| 8:00 am & 5:00 pm                                   | Kurt Weber  | (903) 520-4408                                      | (903) 283-1446                         |  |  |  |  |
| Alternate:  |   |   |  |  |  |  |  |
|   | Emergency   | y Coordinators / Key Personnel                      |  |  |  |  |  |
| Name  | Title   | Phone Number  | Cell Phone Number                      |  |  |  |  |
| Kurt Webber   | Training in First Aid / CPR                         | (903) 520-4408                                      | (903) 283-1446                         |  |  |  |  |
| Kurt Webber   | Project Manager                                     | (972) 735-7067                                      | (972) 310-3729                         |  |  |  |  |
| Kurt Webber   | Site Supervisor/Site Safety Officer                 | (972) 735-7067                                      | (972) 310-3729                         |  |  |  |  |
| Dan Schillings                                      | Account SH&E Manager                                | (210) 253-7567                                      | (210) 601-4129                         |  |  |  |  |
|   | Incident Reporting Line (BY THE END OF THE SHIFT)   | 1.800.348.5046                                      |  |  |  |  |  |
| Ross Haeberle                                       | Anadarko Petroleum Corporation Project Manager      | (936) 446-8430                                      | (936) 446-8430                         |  |  |  |  |
| Eric Olson  | DOT/IATA Shipping Expert                            | (864) 297-3102                                      | (864) 918-2302                         |  |  |  |  |
|   |   |   |  |  |  |  |  |
|   | Fmerger   | ncy Agencies / Public Utilities                     |  |  |  |  |  |
| Name  | Type  | Details   | Phone Number                           |  |  |  |  |
|   | <b>,</b>  | Details   |  |  |  |  |  |
| Maryneal, TX  | Police  |   | 911                                    |  |  |  |  |
| Maryneal, TX  | Fire  |   | 911                                    |  |  |  |  |
| Maryneal, TX  | Ambulance   | 200 Feet Arinage Chart County stee Taylor           | 911                                    |  |  |  |  |
| Rolling Plains Memorial Hospital                    | Nearest Hospital / Clinic                           | 200 East Arizona Street, Sweetwater, Texas          | (325) 235-1701                         |  |  |  |  |
| Emergicare  | Occupational Medical Facility Poison Control Center | See Below   | (325) 795-1888<br>800.222.1222         |  |  |  |  |
|   | Polson Control Center Pollution / Environmental     |   | 800.292.4706                           |  |  |  |  |
|   | National Response Center                            |   | 800.292.4706                           |  |  |  |  |
|   | INFOTRAC (AECOM"s Account Number: 74984)            | ·   | 800-535-5053                           |  |  |  |  |
|   | Tier II or SARA Title III Hot Line                  | · ·   | 800-424-9346                           |  |  |  |  |
|   | Common Ground Alliance Nationwide (CALL B 4 U Dig)  |   | 811                                    |  |  |  |  |
| Continon Ground Amarice Nationwide (CALL B 4 0 Dig) |   |   | 011                                    |  |  |  |  |
| Emergen   | cy Equipment & Supplies                             | Other Emerge  | ency Plan Details                      |  |  |  |  |
| First Aid Kit - Type:                               | ✓ Eye Wash  | Trifilo, Richard D, MD                              |  |  |  |  |  |
| Blankets / Survival:                                | Spill Kit   | 1888 Antilley Road                                  |  |  |  |  |  |
| Fire Extinguishers Type:                            | Other:  | Abilene, Texas 79606                                |  |  |  |  |  |
| Communication Device                                |   | (325) 795-1888                                      |  |  |  |  |  |
| ✓ Vehicle Safety Equipment                          | •   |   |  |  |  |  |  |



#### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off
- CONTROLS

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- •Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- •Psychosocial stress, violence

#### **Hazard Classification**

- •Considers the potential severity of the outcome
- Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

|  | Project Name: Westlake NGP Project Number: 6033 |          |            |   | Client: Anadarko         |                            |                                       |          |                                   |     |
|--|---|----------|------------|---|--------------------------|----------------------------|---------------------------------------|----------|-----------------------------------|-----|
| AECOM  | Supervisor: Kurt Weber                          |          |            | Proje   | ct Manager: Kurt         | Webber                     | Location: Maryneal, Texas             |          |                                   |     |
|  | THA Developed By: Dan Schillings                |          |            |   |                          |                            | Date: November 20                     | 014 thru | November 20                       | )15 |
| TASK HAZARD ANALYSIS   | Task Name: Soil Sample Collection               |          |            |   |                          | Regularity of Tas          | k: One-time                           |          | Routine                           | >   |
|  |   |          |            | d Clas  | ssification              |                            |                                       |          |                                   |     |
| Job Event Sequence (List the major steps of the individual task)   | Hazards<br>(List primary hazards)               | Severity | Likelihood | Risk Level  | Hazard<br>Classification | •                          | Controls<br>ntrols that AECOM will in | <i>'</i> |                                   |     |
| 1 Tail gate safety briefing, Inspect equipment   | None  | 1        | 1          | 1   | Low                      | Standard PPE ensemble; tra |                                       | ment     |                                   |     |
| 2 Brief and follow local safety criteria for the site visiting   | None  | 1        | 1          | 1   | Low                      | Standard PPE ensemble; tra |                                       |          |                                   |     |
| 3 Determine sampling locations to characterize sediments/soils   | Biological                                      | 2        | 3          | 6   | Medium                   | Standard PPE ensemble; tra |                                       |          |                                   |     |
| 4 Ensure sample collection media, tools/supplies are available   | None  | 1        | 1          | 1   | Low                      | Standard PPE ensemble; tra |                                       |          |                                   |     |
| 5 Don appropriate PPE (after visual inspection)  | None  | 1        | 1          | 1   | Low                      | Standard PPE ensemble; tra |                                       |          |                                   |     |
| 6 Collect sediment/soil samples, log points & measurements   | Slips, trips and falls, falling in lagoon       | 3        | 4          | 12  | Medium                   | Standard PPE ensemble; tra |                                       |          |                                   |     |
| 7 Decontaminate sampling tools and impervious supplies   | Splash  | 2        | 3          | 6   | Medium                   | Standard PPE ensemble; tra |                                       |          |                                   |     |
| 8 Dispose of task related waste, i.e., rinsate, Tyvek suit,  | Splash  | 2        | 3          | 6   | Medium                   | Standard PPE ensemble; tra | ining, meters, equipi                 | ment     |                                   |     |
| 9 leather/nitrile gloves, etc. (IDW)   |   |          |            | 0   |                          |                            |                                       |          |                                   |     |
| 10 Prepare samples for shipping to designated laboratory   | None  | 1        | 1          | 1   | Low                      | Standard PPE ensemble; tra | ining, meters, equipi                 | ment     |                                   |     |
| 11 (DOT Level I qualified & verify with DOT Level II Shipper)  |   |          |            | 0   |                          |                            |                                       |          |                                   |     |
| 12   |   |          |            |   |                          |                            |                                       |          |                                   |     |
| 13   |   |          |            |   |                          |                            |                                       |          |                                   |     |
| 14   |   |          |            |   |                          |                            |                                       |          |                                   |     |
| 15   |   |          |            |   |                          |                            |                                       |          |                                   |     |
| 16   |   |          |            |   |                          |                            |                                       |          |                                   |     |
| 17   |   |          |            |   |                          |                            |                                       |          |                                   |     |
|  | Hazard Cla                                      | issific  | cation (   | Guide   | lines                    |                            |                                       |          |                                   |     |
| Severity   |   |          |            | od of   | Occurrence               | Ha                         | zard Classification M                 | atrix    |                                   |     |
| <ol> <li>Remote potential for injury, property damage/\$ loss, or env damage</li> <li>Potential for minor first aid injury, property damage/\$ loss, or environmental damage</li> <li>Potential for moderate personnel injuries, including medical treatment, property damage/\$ loss, environmental damage, or negative public impact</li> <li>Potential for a serious injury, major property damage/\$ loss, serious impact to the environment, and public health</li> <li>Catastrophic damage to people, property/equipment, environment, or public health</li> </ol> |   |          |            | ry unlike<br>likely<br>eely<br>ry likely<br>rtain |                          | 1 2 poor 3 6 4 8 5 10 Ris  | 6 8 10<br>9 12 15<br>12 16 20         | N        | sk Level<br>Low<br>Medium<br>High |     |
| . 2  |   |          |            |   |                          |                            |                                       |          | -                                 |     |

|  |   |   | _                                      |                    |  |   |     |               |         |        |
|--|---|---|--|--------------------|--|---|-----|---------------|---------|--------|
|  | Project Name: We                              | stlake NGP                                      | Project Number: 60335556               | Client: Anadarko   |  |   |     |               |         |        |
| AECOM  | Supervisor: Kurt V                            | Veber   | Project Manager: Kurt Webber           |                    | Location: Ma   | ocation: Maryneal, Texas  |     |               |         |        |
| 7123711  | THA Developed By                              | y: Dan Schillings                               |  |                    | Date: Noven  | ovember 2014 thru November 2015   |     |               |         |        |
| SUMMARY OF CONTROLS                                  | Task Name: Soil                               | Sample Collection                               |  | : One-tim          | • 🗆  | Routin  | e ſ | ~             |         |        |
| Personal Protective Equipment (check all that apply) |   | Air Monitoring (reference HASP monitoring plan) |  |                    |  |   |     |               |         |        |
| ▼ CSA/ANSI Safety-Toed Boots (Leather or Rubber)     |   | No air monitoring required                      |  |                    |  |   |     |               |         |        |
| ▼ CSA/ANSI Safety Glasses or Goggles                 |   | Parameter                                       | Location/Monitoring Interval           | Response           | Action Levels  |   |     | onse Activity |         |        |
| CSA/ANSI-approved Hard Hat                           |   | VOCs by PID                                     | BZ, 30 min                             | 7, 30 min < 10 ppm |  | Continue work and monitoring. If significant changes exi<br>this acceptable range, contact the SSO to investigate the |     |               |         |        |
|  |   | VOOS DY I ID                                    | DZ, 30 IIIII                           | ` '                |  | potential for con   |     |               | mvesugu | te the |
| Leather Gloves                                       |   | Outron  | D7 20 min                              |                    |  | Continue work a   |     |               |         |        |
| Hearing Protection                                   |   | Oxygen  | BZ, 30 min                             |                    |  | this acceptable range, contact the SSO to investigate the potential for contributing factors.                         |     |               |         | te me  |
| Nitrile Gloves for Sampling                          |   | ı Eı  | D7 00 :                                |                    |  | Continue work and monitoring. If significant changes exist this acceptable range, contact the SSO to investigate the  |     |               |         |        |
| Fall Protection                                      | LEL   |   | BZ, 30 min                             |                    | < 10% this acceptable range, potential for contribut |   |     |               |         |        |
|  |   |   |  |                    |  |   |     |               |         |        |
|  |   |   |  |                    |  |   |     |               |         |        |
| Required Training (associated with this THA)         |   | Key SOPs (associat                              | ed with this THA)                      |                    |  | Client & Other Requirements   |     |               |         |        |
| 1 Tool specific training                             | S3NA-307-PR Housekeeping, Worksite            |   | S3NA-520-PR Spill Response, Incidental | Safe               | Safeland Training                                    |   |     |               |         |        |
| 2  | S3NA-308-PR Manual Lifting, Field             |   |  |                    |  |   |     |               |         |        |
| 3  | S3NA-305-PR Hand and Power Tools              |   |  |                    |  |   |     |               |         |        |
| 4  | S3NA-507 PR Hazardous Materials Communication |   |  |                    |  |   |     |               |         |        |
| 5  | S3NA-509-PR Hazardous Waste Operations and Er |   |  |                    |  |   |     |               |         |        |
| 6  | S3NA-511-PR Heat Stress Prevention            |   |  |                    |  |   |     |               |         |        |
|  |   |   | dgement / Signatures                   |                    |  |   |     |               |         |        |
| Project Manager / Supervisor (signature):            |   |   | Date:                                  |                    |  |   |     |               |         |        |
| Name Signature                                       | Company                                       | Date  | Name                                   | Signature          |  | Signature Compar  |     |               | Date    |        |
|  |   |   |  |                    |  |   |     |               |         |        |
|  |   |   |  |                    |  |   |     |               |         |        |
|  |   |   |  |                    |  |   |     |               |         |        |
|  |   |   |  |                    |  |   |     |               |         |        |
|  |   |   |  |                    |  |   |     |               |         |        |
|  |   |   |  |                    |  |   |     |               |         |        |
|  |   |   |  |                    |  |   |     |               |         |        |
|  |   |   |  |                    |  |   |     |               |         |        |

|                                  | Project Name: Westlake NGP                         | Project Number: 60335556                   | Client: Anadarko                       |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|
| A=COM                            | Supervisor: Kurt Weber                             | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |  |  |  |  |
|                                  | THA Developed By: Dan Schillings                   |  | Date: November 2014 thru November 2015 |  |  |  |  |
| EMERGENCY RESPONSE PLAN          | Task Name: Soil Sample Collection                  | Regularity of Task: One                    | e-time  Routine                        |  |  |  |  |
|                                  | <br>Ch   | eck-in Procedures                          |  |  |  |  |  |
| Check-in Times                   | Check-in Person                                    | Phone Number                               | Cell Phone Number                      |  |  |  |  |
| 8:00 am & 5:00 pm                | Kurt Weber   | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
| Alternate:                       |  |  | ,                                      |  |  |  |  |
|                                  | Emergency C  | Coordinators / Key Personnel               |  |  |  |  |  |
| Name                             | Title  | Phone Number                               | Cell Phone Number                      |  |  |  |  |
| Kurt Webber                      | Training in First Aid / CPR                        | (903) 520-4408                             | (903) 283-1446                         |  |  |  |  |
|                                  | Project Manager                                    | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
| Kurt Webber                      | Site Supervisor/Site Safety Officer                | (972) 735-7067                             | (972) 310-3729                         |  |  |  |  |
| Dan Schillings                   | Account SH&E Manager                               | (210) 253-7567                             | (210) 601-4129                         |  |  |  |  |
|                                  | Incident Reporting Line (BY THE END OF THE SHIFT)  | 1.800.348.5046                             |  |  |  |  |  |
| Ross Haeberle                    | Anadarko Petroleum Corporation Project Manager     | (936) 446-8430                             | (936) 446-8430                         |  |  |  |  |
| Eric Olson                       | DOT/IATA Shipping Expert                           | (864) 297-3102                             | (864) 918-2302                         |  |  |  |  |
|                                  |  |  |  |  |  |  |  |
|                                  |  |  |  |  |  |  |  |
|                                  | Emergency  | Agencies / Public Utilities                |  |  |  |  |  |
| Name                             | Туре   | Details                                    | Phone Number                           |  |  |  |  |
| Maryneal, TX                     | Police   |  | 911                                    |  |  |  |  |
| Maryneal, TX                     | Fire   |  | 911                                    |  |  |  |  |
| Maryneal, TX                     | Ambulance  |  | 911                                    |  |  |  |  |
| Rolling Plains Memorial Hospital | Nearest Hospital / Clinic                          | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |  |  |  |  |
| Emergicare                       | Occupational Medical Facility                      | See Below                                  | (325) 795-1888                         |  |  |  |  |
|                                  | Poison Control Center                              |  | 800.222.1222                           |  |  |  |  |
|                                  | Pollution / Environmental                          |  | 800.292.4706                           |  |  |  |  |
|                                  | National Response Center                           |  | 800-424-8802                           |  |  |  |  |
|                                  | INFOTRAC (AECOM"s Account Number: 74984)           |  | 800-535-5053                           |  |  |  |  |
|                                  | Tier II or SARA Title III Hot Line                 |  | 800-424-9346                           |  |  |  |  |
|                                  | Common Ground Alliance Nationwide (CALL B 4 U Dig) |  | 811                                    |  |  |  |  |
|                                  |  |  |  |  |  |  |  |
|                                  | cy Equipment & Supplies                            |  | ncy Plan Details                       |  |  |  |  |
| First Aid Kit - Type:            | Eye Wash   | Trifilo, Richard D, MD                     |  |  |  |  |  |
| Blankets / Survival:             | Spill Kit  | 1888 Antilley Road                         |  |  |  |  |  |
| Fire Extinguishers Type:         | Other:   | Abilene, Texas 79606                       |  |  |  |  |  |
| Communication Device             | -  | (325) 795-1888                             |  |  |  |  |  |
| Vehicle Safety Equipment         |  |  |  |  |  |  |  |



#### This THA (worksheets 1 & 2) must be completed for all field work.

\*\*you may need to change the security settings in your task bar to enable the macros in the forms

- Identify hazards
- Classify hazards
- Identify controls

**HAZARDS** 

- Summarize controls
- Acknowledgement / Sign off

**CONTROLS** 

- Emergency contacts
- Emergency procedures
- Emergency equipment

EMERGENCY RESPONSE Required for all projects/sites which do not have an existing emergency response plan

#### Hazard Identification

- •Natural (biological) bacteria, viruses, insects, plants, birds, and animals
- •Chemical exposure to chemical toxins, acute or chronic, by way of inhalation, injection, ingestion or absorption
- Physical slipping/tripping, being struck by moving objects, repetitive movement, strains from lifting
- Environmental extreme heat or cold, noise, vibrations, magnetic fields, pressure extremes and air quality
- •Psychosocial stress, violence

#### Hazard Classification

- •Considers the potential severity of the outcome
- Considers the likelihood of the occurrence
- •Used to prioritize and determine extent of required controls

#### Controls

- •Elimination (first) choose a different process; modify an existing process; substitute with less hazardous substance
- Engineering Controls (second) physically alter the plant or equipment design in order to circumvent possible hazards; place guards on machinery
- •Administrative Controls (third) change the job procedure and/or process; limit the amount of time an individual is in a hazardous environment through job rotation
- Personal Protective Equipment (last option) provide employees with direct physical protection while working in a hazardous environment

| 1 = 0 0 1 1   | Project Name: Westlake NGP        |  |            | Proje                       | ct Number: 6033          | 5556                       | Client: Anadarko      |                   |      |  |
|---|-----------------------------------|--|------------|-----------------------------|--------------------------|----------------------------|-----------------------|-------------------|------|--|
| AECOM   | Supervisor: Kurt Weber            |  |            | Proje                       | ct Manager: Kurt         | Webber                     | Location: Maryneal,   | Texas             |      |  |
|   | THA Developed By: Dan Schillings  |  |            |                             |                          |                            | Date: November 20     | )14 thru November | 2015 |  |
| TASK HAZARD ANALYSIS  | Task Name: Utility Clearance      |  |            |                             |                          | Regularity of Tas          | k: One-time           | ☐ Routine         | ₹    |  |
|   |                                   | Hazard Classification<br>(before controls) |            |                             |                          |                            |                       |                   |      |  |
| Job Event Sequence (List the major steps of the individual task)                                      | Hazards<br>(List primary hazards) | Severity                                   | Likelihood | Risk Level                  | Hazard<br>Classification |                            |                       |                   |      |  |
| 1 Review proposed borings, find addresses   | None                              | 1  | 1          | 1                           | Low                      | Standard PPE ensemble; tra | •                     |                   |      |  |
| Call Montana's UDIG, obtain locating companies  | None                              | 1  | 1          | 1                           | Low                      | Standard PPE ensemble; tra | •                     |                   |      |  |
| 3 Call BNSF Utility Locactors   | None                              | 1  | 1          | 1                           | Low                      | Standard PPE ensemble; tra | U                     |                   |      |  |
| 4 Complete paper verification and mark areas  | None                              | 1  | 1          | 1                           | Low                      | Standard PPE ensemble; tra | 0 1 1                 |                   |      |  |
| 5 Don applicable PPE  | None                              | 1  | 1          | 1                           | Low                      | Standard PPE ensemble; tra | 0 1 1                 |                   |      |  |
| 6 Verify with drillers/excavators that proposed locations are OK                                      | None                              | 1  | 1          | 1                           | Low                      | Standard PPE ensemble; tra | 0 1 1                 |                   |      |  |
| 7 Preview your walking path for hazards   | Biological, slip, trips and falls | 2  | 3          | 6                           | Medium                   | Standard PPE ensemble; tra | 0 1 1                 |                   |      |  |
| 8 Prior to digging with equip, probe area at least 3' down,   | Public exposure                   | 4  | 3          | 12                          | Medium                   | Standard PPE ensemble; tra |                       | l                 |      |  |
| 9 Probing area is to verify utility checks were correct.  | Could be run over                 | 4  | 3          | 12                          | Medium                   | Standard PPE ensemble; tra | ining, equipment and  | communications    |      |  |
| 10  |                                   |  |            |                             |                          |                            |                       |                   |      |  |
| 11  |                                   |  |            |                             |                          |                            |                       |                   |      |  |
| 12<br>13  |                                   |  |            |                             |                          |                            |                       |                   |      |  |
| 14  |                                   |  |            |                             |                          |                            |                       |                   |      |  |
| 15  |                                   |  |            |                             |                          |                            |                       |                   |      |  |
| 16  |                                   |  |            |                             |                          |                            |                       |                   |      |  |
| 17  |                                   |  |            |                             |                          |                            |                       |                   |      |  |
| 17  | Hazard Clas                       | sifica                                     | ation (    | abiuf                       | lines                    |                            |                       |                   |      |  |
| Severity  | nazara olas                       |  |            |                             | Occurrence               | На                         | zard Classification M | atrix             |      |  |
|   |                                   |  |            |                             |                          |                            | with Colo             |                   |      |  |
| 1 Remote potential for injury, property damage/\$ loss, or env damage                                 |                                   |  | 1 V        | ery unli                    | kely                     |                            | Severity              | T                 |      |  |
| Potential for minor first aid injury, property damage/\$ loss, or environmental damage                |                                   |  | 2 L        | nlikely                     |                          | 2 2 4                      | 3 4 5<br>6 8 10       | Risk Level        |      |  |
| Potential for moderate personnel injuries, including medical treatment, proper negative public impact | Ç                                 |  | 4 V        | ikely<br>ery like<br>ertain | ly                       | Poodilasi                  | 9 12 15<br>12 16 20   | Medium High       |      |  |
| 4 Potential for a serious injury, major property damage/\$ loss, serious impact i                     | · ·                               |  |            |                             |                          |                            |                       | Carranita         |      |  |
| 5 Catastrophic damage to people, property/equipment, environment, or public                           | nealtn                            |  |            |                             |                          | Ris                        | sk Level = Likelihood | x Severity        |      |  |

|                          |                                | Project Name: We   | stlake NGP                 | Project Number: 60335556               |              | Client: Anadarko                                      |        |        |             |   |  |  |
|--------------------------|--------------------------------|--------------------|----------------------------|--|--------------|---|--------|--------|-------------|---|--|--|
| AEC                      | OM                             | Supervisor: Kurt V | Veber                      | Project Manager: Kurt Webber           |              | Location: Maryneal, Texas                             |        |        |             |   |  |  |
|                          |                                | THA Developed By   | y: Dan Schillings          | Date: November 2014 thru November 2015 |              |   |        |        |             |   |  |  |
| SUMMAR                   | Y OF CONTROLS                  | Task Name: Utilit  | y Clearance                | Regularity of Task: One-time  Routin   |              |   |        |        |             | ~ |  |  |
|                          | uipment (check all that apply) |                    |                            | Air Monitoring (refer                  | rence HASP n | nonitoring plan)                                      |        |        |             |   |  |  |
|                          | ed Boots (Leather or Rubber)   | 7                  | No air monitoring required |  |              | - I III THO III G TO G all ou (Coo procedures 201011) |        |        |             |   |  |  |
| CSA/ANSI Safety Gla      |                                |                    | Parameter                  | Location/Monitoring Interval Respo     |              | e/Action Levels                                       | R      | Respon | se Activity |   |  |  |
| CSA/ANSI-approved        | Hard Hat                       |                    |                            |  |              |   |        |        |             |   |  |  |
| CSA/ANSI Type II/III     | Reflective Traffic Safety Vest |                    |                            |  |              |   |        |        |             |   |  |  |
| Leather Gloves           |                                |                    |                            |  |              |   |        |        |             |   |  |  |
| Hearing Protection       |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
| Required Training        | (associated with this THA)     |                    |                            | Client & Other Requirements            |              |   |        |        |             |   |  |  |
| 1 Tool specific training |                                | S3NA-308-PR Mai    | nual Lifting, Field        |  | Safe         | eland Training  |        |        |             |   |  |  |
| 2                        |                                |                    | usekeeping, Worksite       |  |              |   |        |        |             |   |  |  |
| 3                        |                                |                    | 1 3                        |  |              |   |        |        |             |   |  |  |
| 4                        |                                |                    |                            |  |              |   |        |        |             |   |  |  |
| 5                        |                                |                    |                            |  |              |   |        |        |             |   |  |  |
| 6                        |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    | Acknowled                  | Igement / Signatures                   |              |   |        |        |             |   |  |  |
| Project Manager / Superv | risor (signature):             |                    |                            | Date:                                  |              |   |        |        |             |   |  |  |
| Name                     | Signature                      | Company            | Date                       | Name                                   |              | Signature   | Compar | ny     | Dat         | e |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |
|                          |                                |                    |                            |  |              |   |        |        |             |   |  |  |

|   | Project Name: Westlake NGP  | Project Number: 60335556                   | Client: Anadarko                       |
|---|---|--|--|
| <b>AECOM</b>                                  | Supervisor: Kurt Weber  | Project Manager: Kurt Webber               | Location: Maryneal, Texas              |
| AECOM   |   | i Toject Manager. Kurt Webber              | ,                                      |
| 5g-149 5 - 51 - 51 - 51 - 51 - 51 - 51 - 51 - | THA Developed By: Dan Schillings  |  | Date: November 2014 thru November 2015 |
| EMERGENCY RESPONSE PLAN                       | Task Name: Utility Clearance  | Regularity of Task: One                    | e-time  Routine                        |
|   | Ch  | neck-in Procedures                         |  |
| Check-in Times                                | Check-in Person   | Phone Number                               | Cell Phone Number                      |
| 8:00 am & 5:00 pm                             | Kurt Weber  | (903) 520-4408                             | (903) 283-1446                         |
| Alternate:                                    |   |  |  |
|   | Emergency (   | Coordinators / Key Personnel               |  |
| Name  | Title   | Phone Number                               | Cell Phone Number                      |
|   | Training in First Aid / CPR   | (903) 520-4408                             | (903) 283-1446                         |
|   | Project Manager   | (972) 735-7067                             | (972) 310-3729                         |
|   | Site Supervisor/Site Safety Officer   | (972) 735-7067                             | (972) 310-3729                         |
| Dan Schillings                                | Account SH&E Manager  | (210) 253-7567                             | (210) 601-4129                         |
|   | Incident Reporting Line (BY THE END OF THE SHIFT)                           | 1.800.348.5046                             |  |
|   | Anadarko Petroleum Corporation Project Manager                              | (936) 446-8430                             | (936) 446-8430                         |
| Eric Olson                                    | DOT/IATA Shipping Expert  | (864) 297-3102                             | (864) 918-2302                         |
|   |   |  |  |
|   | F   | A service / Duklis Hallates                |  |
|   |   | y Agencies / Public Utilities              |  |
| Name  | Туре  | Details                                    | Phone Number                           |
|   | Police  |  | 911                                    |
|   | Fire  |  | 911                                    |
|   | Ambulance   |  | 911                                    |
| · ·   | Nearest Hospital / Clinic   | 200 East Arizona Street, Sweetwater, Texas | (325) 235-1701                         |
|   | Occupational Medical Facility   | See Below                                  | (325) 795-1888                         |
|   | Poison Control Center   |  | 800.222.1222                           |
|   | Pollution / Environmental   |  | 800.292.4706                           |
|   | National Response Center  |  | 800-424-8802                           |
|   | INFOTRAC (AECOM"s Account Number: 74984) Tier II or SARA Title III Hot Line |  | 800-535-5053                           |
|   |   |  | 800-424-9346                           |
|   | Common Ground Alliance Nationwide (CALL B 4 U Dig)                          |  | 811                                    |
| Emergenc                                      | cy Equipment & Supplies   | Other Emerger                              | ncy Plan Details                       |
| First Aid Kit - Type:                         | Eye Wash  | Trifilo, Richard D, MD                     | icy i ian Details                      |
| Blankets / Survival:                          | Spill Kit   | 1888 Antilley Road                         |  |
| Fire Extinguishers Type:                      | Other:  | Abilene, Texas 79606                       |  |
| Communication Device                          | Cuici.  | (325) 795-1888                             |  |
| Vehicle Safety Equipment                      |   | (323) 173-1000                             |  |

# Attachment B Material Safety Data Sheets

[attach MSDSs]

# .....Alconox

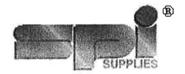
SPI Supplies Division Structure Probe, Inc.

P.O. Box 656 West Chester, PA 19381-0656 USA **Phone:** 1-(610)-436-5400 **Fax:** 1-(610)-436-5755

E-mail: spi3spi@2spi.com

WWW: http://www.2spi.com

Manufacturer's CAGE: 1P573



# **Material Safety Data Sheet**

# SPI #01200-AB and #01200A-AB Alconox® Powdered Detergent

Section 1: Identification

Date Effective..... November 14, 2005

(most recent revision)

Chemical Name/Synonyms... On Label: Alconox®

Chemical Family..... Anionic powdered detergent

Emergencies

Contacting CHEMTREC:

24 Hour Emergency Use Only #'s... Worldwide phone: 1-(703)-527-3887 Worldwide FAX: 1-(703)-741-6090

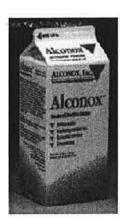
Toll-free phone: 1-(800)-424-9300 USA only

Product or Trade Name.... SPI #01200-AB and #01200A-AB

Alconox® Powdered Detergent

CAS #..... Not applicable

Chemical Formula..... Not applicable



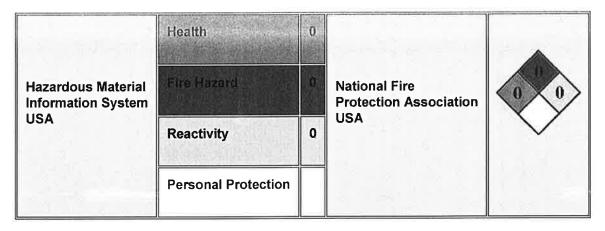
## **Section 2 Composition**

Component Name

CAS # OSHA OSHA ACGIH

ACGIH

No hazardous ingredients in Alconox Powdered Detergent as defined by the OSHA Standard and Hazardous Substance List 29 CFR 1910 Subpart Z.



NFPA (National Fire Protection Association) Rating (Scale 0-4): HEALTH=0 FLAMMABILITY=0 REACTIVITY=0 OTHER=0 Not known

# **Section 3: Hazard Identification**

Routes of entry

Inhalation? Yes Skin? No Yes Ingestion?

Health Hazards (Acute and chronic):

Inhalation of powder may prove locally irritating to mucous membranes. Ingestion may cause discomfort and/or diarrhea. Eye contact may prove irritating.

Carcinogenicity:

NTP? No

IARC Monographs? No OSHA Regulated? No

#### **Section 4: First Aid Measures**

Signs and Symptoms of Exposure:

Exposure may irritate mucous membranes. May cause sneezing.

Medical conditions generally aggravated by exposure:

Not established. Unnecessary exposure to this product or any industrial chemical should be avoided. Respiratory conditions may be aggravated by powder if air borne.

Emergency and First Aid Procedures:

Eyes: Immediately flush eyes with copious amounts of water for

minimum 15 minutes. Call physician.

Skin: Flush with plenty of water.

Ingestion: Drink large quantities of water or milk. Do not

induce vomiting. If vomiting occurs re-administer

fluids. See a physician for discomfort.

## **Section 5: Fire Fighting Measures**

NFPA Rating: Not known

#### Extinguishing Media

Suitable/Not suitable:

SMALL FIRE: Use DRY chemical powder, water, foam, carbon dioxide

LARGE FIRE: Use extinguishing media suitable for the

surrounding materials.

Special firefighting procedures:

Self-contained positive pressure breathing apparatus and protective clothing should be worn when fighting fires involving chemicals.

Unusual Fire/Explosion Hazards: None

Hazardous thermal decomposition products: None known.

Protection of fire fighters: No special measures are required.

Flammable Limits:

LEL: No data UEL: No data

#### Section 6: Accidental Release Measures

Personal precautions: No special precautions

Environmental Precautions and Clean Up Methods:

Material foams profusely. Recover as much as possible and flush remainder to sewer. Material is biodegradable.

## Section 7: Handling and Storage

Material should be stored in a dry area to prevent caking.

- .

#### Section 8: Exposure Controls and Personal Protection

Engineering controls: Normal ventilation is normally required

when handling or using this product. Avoid

conditions that could produce dusting.

Personal Protective Equipment

Respiratory system: Dust mask recommended but not required.

Skin and body: Laboratory coat recommended but not required.

Hands: Impervious gloves recommended

Eyes: Goggles are recommended, especially when handling solutions

irrespective of what they might be.

Other: Wash hands before eating, drinking, or smoking.

## Section 9: Physical and Chemical Properties

Physical State and Appearance: White powder interspersed with cream

colored flakes.

Odor: None

Boiling Point: Not applicable

Melting Point: Not applicable

Density (water = 1): Not applicable

Solubility: Appreciable, to 10% at ambient conditions.

Octanol/water partition coefficient: Not available

pH: Not known

Flash Point: None

Flammability: Non-flammable

Autoignition temperature: Not applicable

#### Section 10: Stability and Reactivity

Chemical Stability: The product is stable

Hazardous polymerization: Will not occur

Conditions to Avoid: None

Hazardous Products of Deposition: May release CO2 on burning.

#### Reactions with Air and Water:

Does not react with air, water or other common materials.

## Section 11: Toxicological Information

Summary: Not considered to be toxic to humans or animals.

Skin Effects: Can be locally irritating

Eye Irritation: Can be irritating to the eyes

Inhalation: Dust can be irritating to mucous membranes

Sensitization: Not known

Chronic toxicity: There is no known effect from the chronic exposure

to this product.

## Section 12: Ecological Information

Exotoxicity: Not know but it is expected to be low because the

material is biodegradable.

Environmental Fate: It is biodegradable.

Bioaccumulation: Not expected to occur (because the material is

biodegradable).

#### Section 13: Disposal Considerations

This material is NOT classified as a hazardous material by RCRA. Use only licensed transporters and permitted disposal facilities and conform to all laws.

Recycle to process, if possible.

Germany water class: VCI WGK: No products were found.

Methods of disposal; waste of residues; contaminated packaging:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

#### Section 14: Transport Information

Proper Shipping Name: Non-Regulated, No dangerous cargo

DOT Hazard Class: Non-Regulated, No dangerous cargo

UN/NA ID: Non-Regulated, No dangerous cargo

Packing Group: Not Applicable

Labels: Not Regulated

Marine Pollutant: No

NAER Guidebook: Not Regulated

DOT Status: Not Regulated

Land-Road/Railway:

ADR/RID Class: No dangerous cargo

Sea:

IMDG Class: No dangerous cargo

Air:

IATA-DGR Class: No dangerous cargo

#### Section 15: Regulatory Information

TSCA: All components of this product are listed on the TSCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification Rule, they will be listed below.

TSCA 12(b) Component Listed under TSCA Section

SARA Title 3: Section 313 Information/Emissions Reporting (40 CFR 372):

Component Reporting Threshold

SARA-Section 311/312:

No components present in this product are subject to the reporting requirements of this statute.

CERCLA Hazardous Substances and their Reportable Quantities:

Component Reportable Quantity

EU Regulations: Risk Phrases: This product is not classified according to the EU regulations.

Safety Phrases: Not applicable

Contains: Not applicable

#### California Prop. 65:

Proposition 65 requires manufacturers or distributors of consumer products into the State of California to provide a warning statement if the product contains ingredients for which the State has found to cause cancer, birth defects or other reproductive harm. If this product contains an ingredient listed by the State of California to cause cancer or reproductive toxicity, it will be listed below:

None found

#### Section 16: Other Information

#### Disclaimer of Liability:

Caution! Do not use SPI Supplies products or materials in applications involving implantation within the body; direct or indirect contact with the blood pathway; contact with bone, tissue, tissue fluid, or blood; or prolonged contact with mucous membranes. Products offered by SPI Supplies are not designed or manufactured for use in implantation in the human body or in contact with internal body fluids or tissues. SPI Supplies will not provide to customers making devices for such applications any notice, certification, or information necessary for such medical device use required by US FDA (Food and Drug Administration) regulation or any other statute. SPI Supplies and Structure Probe, Inc. make no representation, promise, express warranty or implied warranty concerning the suitability of these materials for use in implantation in the human body or in contact with internal body tissues of fluids.

The information and recommendations set forth above are taken from sources believed to be accurate as of the date hereof, however SPI Supplies and Structure Probe, Inc. make no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assume no liability to any user thereof. The information contained in this sheet does not constitute a hazard assessment and should not be used in place of the user's own assessment of work place risks as required by other health and safety legislation. Be aware of the Structure Probe, Inc. Copyright Policy. Structure Probe, Inc. grants a nonexclusive license to make unlimited copies of this safety sheet for internal use only. Quite obviously, this information would pertain only to this material when purchased from SPI Supplies as product from other sources, with other ingredients and impurity levels could have substantially different properties.

Thursday February 22, 2007

© Copyright 2000 - 2007. By Structure Probe, Inc.
Contacting SPI Supplies and Structure Probe, Inc.
All rights reserved.
All trademarks and trade names are the property of their respective owners.

Privacy Policy

Worldwide Distributors, Representatives, and Agents

HASP – Site Investigation and Remediation Former Kerr-McGee Westlake Natural Gasoline Plant

# .....Isobutylene Calibration Gas



# MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I What is the material and what do I need to know in an emergency?

# 1. PRODUCT IDENTIFICATION

CHEMICAL NAME; CLASS:

## NON-FLAMMABLE GAS MIXTURE

Document Number: 002103

PRODUCT USE:

For general analytical/synthetic chemical uses.

SUPPLIER/MANUFACTURER'S NAME:

AIRGAS INC.

ADDRESS:

259 North Radnor-Chester Road

Suite 100

Radnor, PA 19087-5283

**BUSINESS PHONE:** 

1-610-687-5253

**EMERGENCY PHONE:** 

1-800-949-7937 1-423-479-0293

International: DATE OF PREPARATION

April 22, 2001

## 2. COMPOSITION and INFORMATION ON INGREDIENTS

| CHEMICAL CAS # mole % EXPOSURE LIMITS IN AIR |               |               |  |                 |                |                 |                  |            |  |  |
|--|---------------|---------------|--|-----------------|----------------|-----------------|------------------|------------|--|--|
| NAME   |               |               | AC   | GIH             | OS             | HA              | NIOSH            | OTHER      |  |  |
|  |               |               | TLV  | STEL            | PEL            | STEL            | IDLH             |            |  |  |
|  |               |               | ppm  | ppm             | ppm            | ppm             | ppm              | ppm        |  |  |
| Isobutylene                                  | 115-11-7      | 1 ppm -       | There are no specific exposure limits for Isobutylene. Isobutylene is a simple |                 |                |                 |                  |            |  |  |
|  |               | 1.7%          | asphyxiant (SA). Oxygen levels should be maintained above 19.5%.               |                 |                |                 |                  |            |  |  |
| Air  | 25635-88-     | Balance       | There are no specific exposure limits applicable to Air.                       |                 |                |                 |                  |            |  |  |
|  | 5             |               |  |                 |                |                 |                  |            |  |  |
| Air is a mix                                 | dure of gases | . The primary | components of  | of air, and the | approximate o  | concentration   | of each comp     | onent, are |  |  |
|  | listed below  |               |  |                 |                |                 |                  |            |  |  |
| Nitrogen                                     | 7727-37-9     | 79.%          | There a  | re no specific  | exposure limi  | ts for Nitroger | n. Nitrogen is a | a simple   |  |  |
|  |               |               | asphy  | kiant (SA). Ox  | ygen levels sh | nould be main   | tained above     | 19.5%.     |  |  |
| Oxygen                                       | 7782-44-7     | 21%           |  | There are       | no specific ex | posure limits f | or Oxygen        |            |  |  |

NE = Not Established. See Section 16 for Definitions of Terms Used.

NOTE (1): ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

# 3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a colorless, odorless, non-flammable gas. The main health

hazards associated with releases of this gas are related to the high pressure within the cylinder. Air, the main component of this product, is generally considered non-flammable, however, Air will support combustion. The flammable component of this gas mixture is below the LEL. A cylinder rupture hazard exists when this product, which is under pressure, is subjected to heat or flames. Emergency responders must wear personal protective equipment appropriate for the situation to which they are responding.

<u>SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE</u>: The most significant route of over-exposure for air is by inhalation at elevated or reduced pressure.

INHALATION: This product is non-toxic. Air, the main component of this product, is necessary for life.

OTHER POTENTIAL HEALTH EFFECTS: Contact with rapidly expanding gases (which are released under high pressure) may cause frostbite. Symptoms of frostbite include change in skin color to white or grayish-vellow. The pain after contact with liquid can quickly subside.

<u>HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms</u>. Over-exposure to this product may cause the following health effects:

**ACUTE:** The most significant hazards associated with compressed air is the pressure hazard. Contact with rapidly expanding gases (which are released under high pressure) may cause frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside.

**CHRONIC:** There are currently no known adverse health effects associated with chronic exposure to this gas.

**TARGET ORGANS:** ACUTE: Respiratory system under ambient low pressure conditions. Central nervous system under ambient high pressure conditions. CHRONIC: None expected.

# PART II What should I do if a hazardous situation occurs?

#### 4. FIRST-AID MEASURES

RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus equipment should be worn.

Victim(s) must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or other health professional with victim(s). Remove victim(s) to fresh air, as quickly as possible. In case of eye contact which leads to irritation, immediately flush eyes with copious amounts of water for at least 15 minutes. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Only trained personnel should administer supplemental oxygen.

In case of frostbite, place the frostbitten part in warm water. DO NOT USE HOT WATER. If warm water is not available, or is impractical to use, wrap the affected parts gently in blankets. Alternatively, if the fingers or hands are frostbitten, place the affected area in the armpit. Encourage victim to gently exercise the affected part while being warmed. Seek immediate medical attention.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Acute or chronic respiratory conditions, as well as disorders involving the "Target Organs", as listed in Section 3 (Hazard Information), may be aggravated by overexposure to the components of this product.

RECOMMENDATIONS TO PHYSICIANS: Administer oxygen as soon as possible, following exposure.

## 5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable. Upper (UEL): Not applicable.

# 5. FIRE-FIGHTING MEASURES (Continued)

FIRE EXTINGUISHING MATERIALS: Non-flammable gas. Use extinguishing media appropriate for surrounding fire.

<u>UNUSUAL FIRE AND EXPLOSION HAZARDS</u>: When involved in a fire, this material may decompose and produce toxic gases including carbon monoxide and carbon dioxide. Additionally, when involved in fire, the cylinders may rupture.

Explosion Sensitivity to Mechanical Impact: Not Sensitive.

Explosion Sensitivity to Static Discharge: Not Sensitive.

<u>SPECIAL FIRE-FIGHTING PROCEDURES</u>: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed cylinders from area, if it can be done without risk to fire-fighters. Withdraw immediately in case of rising sounds from venting pressure relief devices or any discoloration of tanks or cylinders due to a fire.

## 6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using preplanned procedures. Proper protective equipment should be used. In case of a release, clear the affected area, protect people, and respond with trained personnel. Minimum Personal Protective Equipment should be Level D: safety glasses, and mechanically-resistant gloves. Level B, which includes the use of Self-Contained Breathing Apparatus, should be worn when oxygen levels are below 19.5% or are unknown. Locate and seal the source of the leaking gas. If this does not stop the release (or if it is not possible to reach the valve), allow the gas to release in place or remove it to a safe area and allow the gas to be released there.

# PART III How can I prevent hazardous situations from occurring?

# 7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: Do not eat or drink while handling chemicals.

STORAGE AND HANDLING PRACTICES: Cylinders should be stored in dry, well-ventilated areas away from sources of heat. Compressed gases can present significant safety hazards. Store containers away from heavily trafficked areas and emergency exits.

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Protect cylinders against physical damage. Store in cool, dry, well-ventilated, fireproof area, away from flammable or combustible materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors or loading docks. Do not allow area where cylinders are stored to exceed 52°C (125°F). Isolate from incompatible materials including flammable materials (see Section 10, Stability and Reactivity), which can burn violently. Use only storage containers and equipment (pipes, valves, fittings to relieve pressure, etc.) designed for the storage of Air. Do not store containers where they can come into contact with moisture. Cylinders should be stored upright and be firmly secured to prevent falling or being knocked over. Cylinders can be stored in the open, but in such cases, should be protected against extremes of weather and from the dampness of the ground to prevent rusting. Never tamper with pressure relief devices in valves and cylinders. The following rules are applicable to situations in which cylinders are being used:

**Before Use:** Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in-place until cylinder is ready for use.

**During Use:** Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

**After Use:** Close main cylinder valve. Replace valve protection cap. Mark empty cylinders "EMPTY". **NOTE:** Use only DOT or ASME code containers. Earth-ground and bond all lines and equipment associated with this product. Close valve after each use and when empty. Cylinders must not be recharged except by or with the consent of owner. For additional information refer to the Compressed Gas Association Pamphlet P-1, Safe Handling of Compressed Gases in Containers. Additionally, refer to CGA Bulletin SB-2 "Oxygen Deficient Atmospheres".

## 7. HANDLING and STORAGE (Continued)

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged out safely. Purge gas handling equipment with inert gas (i.e. nitrogen) before attempting repairs. Always use product in areas where adequate ventilation is provided.

# 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation.

RESPIRATORY PROTECTION: Maintain Oxygen levels above 19.5% in the workplace. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

<u>EYE PROTECTION</u>: Splash goggles, face-shields or safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133, or Canadian Standards.

<u>HAND PROTECTION</u>: Wear mechanically-resistant gloves when handling cylinders of this product. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

<u>BODY PROTECTION</u>: Use body protection appropriate for task. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR.

## 9. PHYSICAL and CHEMICAL PROPERTIES

The following information is for Air, the main component of this product, unless otherwise stated:

RELATIVE VAPOR DENSITY: 1

<u>EVAPORATION RATE</u> (nBuAc = 1): Not applicable.

SPECIFIC GRAVITY: Not applicable.

FREEZING POINT: -216.2°C (-357.2°F)

SOLUBILITY IN WATER: 1.49% (v/v)

BOILING POINT @ 1 atmos: -194.3°C(-317.8°F)

VAPOR PRESSURE, mmHg @ 20°C:.

pH: Not applicable.

EXPANSION RATIO: Not applicable.

VAPOR PRESSURE: Not applicable.

SPECIFIC VOLUME: 13.3 fts/lb; (0.833 ms/kg)

ODOR THRESHOLD: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION:

Not applicable.

The following information is pertinent to this gas mixture:

APPEARANCE, ODOR AND COLOR: This product is a colorless, odorless gas.

<u>HOW TO DETECT THIS SUBSTANCE</u> (warning properties): There are no distinctive properties to this product. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

## 10. STABILITY and REACTIVITY

STABILITY: Normally stable.

**DECOMPOSITION PRODUCTS:** None known.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE. Air (the main component of this product) is not compatible with fuels, in that air will support combustion. The Isobutylene component of this mixture is incompatible with Strong oxidizers (e.g., chlorine, bromine pentafluoride, oxygen diffuoride, and nitrogen trifluoride).

HAZARDOUS POLYMERIZATION: Will not occur.

<u>CONDITIONS TO AVOID</u>: Contact with incompatible materials and exposure to heat, sparks and other sources of ignition. Cylinders exposed to high temperatures or direct flame can rupture or burst.

# PART III How can I prevent hazardous situations from occurring?

# 11. TOXICOLOGICAL INFORMATION

<u>TOXICITY DATA</u>: The following toxicology data are for the components of this gas mixture present at a level greater than 1 mole %:

#### **ISOBUTYLENE:**

LC50 (Inhalation-Rat) 620 gm/m3/4 hours LC50 (Inhalation-Mouse) 415 gm/m3/2 hours

<u>SUSPECTED CANCER AGENT</u>: No component of this gas mixture is found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC, and therefore is not considered to be, nor suspected to be, cancer causing agents by these agencies.

<u>IRRITANCY OF PRODUCT</u>: Contact with rapidly expanding gases can cause frostbite and damage to exposed skin and eyes.

SENSITIZATION OF PRODUCT: No component of this product is a skin or respiratory sensitizer.

<u>REPRODUCTIVE TOXICITY INFORMATION</u>: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: This product is not reported to cause mutagenic effects in humans.

Embryotoxicity: This product is not reported to cause embryotoxic effects in humans.

Teratogenicity: This product is not reported to cause teratogenic effects in humans.

Reproductive Toxicity: This product is not reported to cause adverse reproductive effects in humans. A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with

the reproductive process.

<u>BIOLOGICAL EXPOSURE INDICES</u>: Biological Exposure Indices (BEIs) have been determined for the components of this product are as follows:

## 12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: This gas will be dissipated rapidly in well-ventilated areas.

<u>EFFECT OF MATERIAL ON PLANTS or ANIMALS</u>: No adverse effect is anticipated to occur to plant-life, except for frost produced in the presence of rapidly expanding gases.

<u>EFFECT OF CHEMICAL ON AQUATIC LIFE</u>: No evidence of an adverse effect of this product on aquatic life is currently available.

## 13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Product removed from cylinder must be disposed of in accordance with appropriate U.S. Federal, State and local regulations or with regulations of Canada and its Provinces. Return cylinders with residual product to Airgas, Inc. Do not dispose of locally.

#### 14. TRANSPORTATION INFORMATION

THIS GAS MIXTURE IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME:

Compressed gases, n.o.s. (Air, Isobutylene)

HAZARD CLASS NUMBER and DESCRIPTION:

2.2 (Compressed Gas)

UN IDENTIFICATION NUMBER:

UN 1956

PACKING GROUP:

Not Applicable

DOT LABEL(S) REQUIRED:

Compressed Gas

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 126
TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This (

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This gas mixture is considered as dangerous goods, per regulations of Transport Canada. Use the above information for the preparation of Canadian Shipments.

#### 15. REGULATORY INFORMATION

# **ADDITIONAL U.S. REGULATIONS:**

<u>U.S. SARA REPORTING REQUIREMENTS</u>: The components of this gas mixture are not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.

<u>U.S. SARA THRESHOLD PLANNING QUANTITY</u>: There are no specific Threshold Planning Quantities for this material. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

<u>U.S. TSCA INVENTORY STATUS:</u> The components of this product are listed on the TSCA Inventory. <u>OTHER U.S. FEDERAL REGULATIONS</u>: Not applicable.

<u>U.S. STATE REGULATORY INFORMATION</u>: The components of this gas mixture are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: None.

California - Permissible Exposure Limits for Chemical Contaminants: None.

Florida - Substance List: Isobutylene. Illinois - Toxic Substance List: None.

Kansas - Section 302/313 List: None.

Minnesota - List of Hazardous Substances: Isobutylene.

Massachusetts - Substance List: None,

Missouri - Employer Information/Toxic Substance List: None,

New Jersey - Right to Know Hazardous Substance List: Isobutylene.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: None,

Pennsylvania - Hazardous Substance List: Isobutylene,

Rhode Island - Hazardous Substance List: None.

Texas - Hazardous Substance List: None,

West Virginia - Hazardous Substance List: None:

Wisconsin - Toxic and Hazardous Substances: None.

<u>CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65)</u>: No component of this product is on the California Proposition 65 Lists.

LABELING: CAUTION: HIGH PRESSURE GAS.

MAY ACCELERATE COMBUSTION.

Keep oil and grease away.

Use equipment rated for cylinder pressure. Close valve after each use and when empty.

Use in accordance with the Material Safety Data Sheet.

FIRST-AID:

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If

breathing is difficult, give oxygen. Call a physician.

IN CASE OF FROSTBITE, obtain immediate medial attention.

DO NOT REMOVE THIS PRODUCT LABEL.

## ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL INVENTORY: The components of this product are listed on the DSL Inventory.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: The

components of this product are not on the CEPA Priorities Substances Lists.

CANADIAN WHMIS SYMBOLS: Class A: Compressed Gases

# 16. OTHER INFORMATION

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.

9163 Chesapeake Drive, San Diego, CA 92123-1002 858/565-0302

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. AirGas, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, AirGas, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

# **DEFINITIONS OF TERMS**

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

- --

**CAS** #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. **EXPOSURE LIMITS IN AIR:** 

**ACGIH** - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV** - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (**TWA**), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (**C**). Skin absorption effects must also be considered.

**OSHA** - U.S. Occupational Safety and Health Administration. **PEL** - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

**IDLH** - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30- minutes without suffering escape-preventing or permanent injury. **The DFG** - **MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). **NIOSH** issues exposure guidelines called **Recommended Exposure Levels** (**RELs**). When no exposure guidelines are established, an entry of **NE** is made for reference.

#### **HAZARD RATINGS:**

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: 0 (minimal acute or chronic exposure hazard); 1 (slight acute or chronic exposure hazard); 2 (moderate acute or significant chronic exposure hazard); 3 (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); 4 (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: 0 (minimal hazard); 1 (materials that require substantial pre-heating before burning); 2 (combustible liquid or solids; liquids with a flash point of 38-93 C [100-200 F]); 3 (Class IB and IC flammable liquids with flash points below 38 C [100 F]); 4 (Class IA flammable liquids with flash points below 23 C [73 F] and boiling points below 38 C [100 F]. Reactivity Hazard: 0 (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); 2 (materials that are unstable but do not detonate or which can react violently with water); 3 (materials that can detonate when initiated or which can react explosively with water); 4 (materials that can detonate at normal temperatures or pressures).

PERSONAL PROTECTIVE EQUIPMENT CODES: B: Gloves and goggles; C: Gloves, goggles, rubber apron (appropriate body protection); D: Gloves, goggles, faceshield; rubber apron (appropriate body protection); X: Special attention should be given to PPE Selection.

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: 0 (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); 1 (materials that on exposure under fire conditions could cause irritation or minor residual injury); 2 (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); 3 (materials that can on short exposure could cause serious temporary or residual injury); 4 (materials that under very short exposure could cause death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

#### FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). Flash Point – Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL – the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

#### TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: LD50 - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; LC50 - Lethal Concentration (gases) which kills 50% of the exposed animals; ppm concentration expressed in parts of material per million parts of air or water; mg/m3 concentration expressed in weight of substance per volume of air; mg/kg quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: IARC - the International Agency for Research on Cancer; NTP - the National Toxicology Program, RTECS - the Registry of Toxic Effects of Chemical Substances, OSHA and CAL/OSHA. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include TDLo, the lowest dose to cause a symptom and TCLo the lowest concentration to cause a symptom; TDo, LDLo, and LDo, or TC, TCo, LCLo, and LCo, the lowest dose (or concentration) to cause lethal or toxic effects. BEI - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV. Ecological Information: EC is the effect concentration in water.

#### **REGULATORY INFORMATION:**

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substances List (**DSL/NDSL**); the U.S. Toxic Substance Control Act (**TSCA**); Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA or Superfund**); and various state regulations.

# ..... Silica Sand

# **Material Safety Data Sheet**

SECTION I - Material Identity

SECTION II - Manufacturer's Information

SECTION III - Physical/Chemical Characteristics

SECTION IV - Fire and Explosion Hazard Data

SECTION V - Reactivity Data

SECTION VI - Health Hazard Data

SECTION VII - Precautions for Safe Handling and Use

SECTION VIII - Control Measures

SECTION IX - Label Data

SECTION X - Transportation Data

SECTION XI - Site Specific/Reporting Information

SECTION XII - Ingredients/Identity Information

# **SECTION I - Material Identity**

Item

Name

Part Number/Trade Name

CRYSTALLINE SILICA

National Stock Number

5610PSILICASAND

CAGE Code

74754

Part Number Indicator

A

MSDS Number

183427

HAZ Code

С

# **SECTION II - Manufacturer's Information**

Manufacturer Name

UNIMIN CORPORATION

Street

258 ELM STREET

City

NEW CANAAN

State

CT

Country

Πc

Zip Code

06840

Emergency Phone

203-966-8880

Information Phone

203-966-8880

# **MSDS Preparer's Information**

Date MSDS Prepared/Revised

18JUL96

Date of Technical Review

10JUL95

Active Indicator

Y

# **Alternate Vendors**

Vendor #1 CAGE

74754

# **SECTION III - Physical/Chemical Characteristics**

Hazard Storage Compatibility Code

Nl

Appearance/Odor GRANULAR OR POWDER; ODORLESS

Boiling Point 4046F,2230C

Melting Point 2930F,1610C

Vapor Pressure N/A

Vapor Density N/A

Specific Gravity 2.65

Decomposition Temperature N/K

Evaporation Rate NOT APPLICABLE

Solubility in Water INSOLUBLE

Percent Volatiles by Volume N/K

Chemical pH N/K

Corrosion Rate N/K

Container Type J

Container Pressure Code 4

Temperature Code 8

Product State Code S

# **SECTION IV - Fire and Explosion Hazard Data**

Flash Point Method UNK

Lower Explosion Limit N/A

Upper Explosion Limit N/A

Extinguishing Media MEDIA SUITABLE FOR SURROUNDING FIRE (FP

N)

Special Fire Fighting Procedures

NOT APPLICABLE (MFR. USE NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE

EQUIPMENT (FP N)

Unusual Fire/Explosion Hazards

NOT APPLICABLE

# **SECTION V - Reactivity Data**

Stability

YES

Stability Conditions to Avoid

NONE

Materials to Avoid

SILICA WILL DISSOLVE IN HYDROFLUORIC ACID & PRDCEA CORR GAS--SILICON

TETRAFLUORIDE. CNTCT W/POWERFUL (SEE

SUPP DATA)

Hazardous Decomposition Products

NONE

Hazardous Polymerization

NO

Polymerization Conditions to Avoid NOT RELEVANT

LD50 - LD50 Mixture

NONE SPECIFIED BY MANUFACTURER

## SECTION VI - Health Hazard Data

Route of Entry: Skin

NO

Route of Entry: Ingestion

NO

Route of Entry: Inhalation

YES

Health Hazards - Acute and Chronic

EXCESSIVE INHALATION OF DUST MAY RESULT

IN RESPIRATORY DISEASE, INCLUDING

SILICOSIS, PNEUMOCONIOSIS AND PULMONARY

FIBROSIS

Carcinogenity: NTP NO

Carcinogenity: IARC YES

Carcinogenity: OSHA NO

Explanation of Carcinogenity CRYSTALLINE SILICA: GROUP 2A (IARC)

Symptoms of Overexposure SHORTNESS OF BREATH AND REDUCED

PULMONARY FUNCTION. THIS INERT MATERIAL GIVES NO POTENTIAL ACUTE TOXIC HAZARD

Medical Cond. Aggravated by Exposure

INDIVIDUALS WITH PULMONARY AND/OR RESPIRATORY DISEASE INCLUDING, BUT NOT LIMITED TO, ASTHMA AND BRONCHITIS, OR SUBJECT TO EYE IRRITATION, SHOULD BE PRECLUDED FROM EXPOSURE

Emergency/First Aid Procedures

EYES: FLUSH WITH RUNNING WATER FOR AT LEAST 15 MINUTES. INHAL: REMOVE TO FRESH AIR. GIVE OXYGEN WITH ARTIFICIAL RESPIRATION AS NEEDED. SEEK MEDICAL ATTENTION FOR TREATMENT, OBSERVATION AND SUPPORT ASNEEDED. INGEST: CALL MD IMMEDIATELY (FP N). SKIN: FLUSH WITH COPIOUS AMOUNTS OF WATER. CALL MD (FP N)

# SECTION VII - Precautions for Safe Handling and Use

Steps if Material Released/Spilled

IF UNCONTAMINATED, COLLECT USING DUSTLESS METHOD (WATER OR VACUUM). IF CONTAMINATED, USE APPROPRIATE METHOD IN LIGHT OF NATURE OF CONTAMINATION. USE APPROPRIATE CONTAINER

Neutralizing Agent

NONE SPECIFIED BY MANUFACTURER

Waste Disposal Method

IF UNCONTAMINATED, DISPOSE AS AN INERT, NON- METALLIC MINERAL. IF CONTAMINATED, USE APPROPRIATE METHOD IN LIGHT OF CONTAMINATION IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS

Handling and Storage Precautions

TAKE NORMAL PRECAUTIONS AGAINST BAG BREAKAGEOR SPILLS OF BULK MATERIAL.

- 00

AVOID CREATION OF RESPIRABLE DUST

Other Precautions

USE ADEQ VENT/DUST COLLECTION. DO NOT PERMIT DUST TO ACCUM IN WORK AREA.

MAINTAIN/USE PROPER & CLEAN RESP EQUIP.
CLEAN CLTHG WHICH HAS BECOME DUSTY.

WARN/TRAIN YOUR EMPLOYEES & WARN YOUR
CUSTOMERS (IN THEEVENT OF RESALE) (SEE SUPP DATA)

## SECTION VIII - Control Measures

Respiratory Protection USE CONVENTIONAL PARTICULATE NIOSH/MSHA

APPROVED RESPIRATORY PROTECTION BASED

ON CONSIDERATIONS OF AIRBORNE CONCENTRATION & DURATION OF EXPOSURE.

SEE MOST RECENT STDS OF ANSI (Z.88.2), OSHA (29 CFR PART 1910.134), & MSHA (30

CFR PART 56)

Ventilation LOCAL EXHAUST/MECHANICAL (GENERAL) TO

MEET PEL REQUIREMENTS

Protective Gloves IMPERVIOUS GLOVES (FP N)

Eye Protection CHEMICAL WORKERS GOGGLES (FP N)

Other Protective Equipment AS APPROPRIATE IN LIGHT OF SPECIFIC

APPLICATION

Work Hygienic Practices AVOID CREATING AND BREATHING DUST

Supplemental Health/Safety Data MATLS TO AVOID: OXIDIZING AGENTS,

0

FLUORINE, CHLORINE, TRIFLUORIDE MANGANESE TRIOXIDE AND OXYGEN

DIFLUORIDE MAY CAUSE FIRES. OTHER PREC:

IN ACCORDANCE WITH ALL APPLICABLE

FEDERAL AND STATE "RIGHT TO KNOW" LAWS

AND REGULATIONS

- 00

Disposal Code

SECTION IX - Label Data

Protect Eye YES

Protect Skin YES

Protect Respiratory YES

Chronic Indicator YES

Contact Code SLIGHT

Fire Code UNKNOWN

Health Code UNKNOWN

React Code UNKNOWN

Specific Hazard and Precaution ACUTE: EXCESSIVE INHALATION OF DUST MAY

RESULT IN RESPIRATORY DISEASE, INCLUDING SILICOSIS, PNEUMOCONIOSIS AND PULMONARY FIBROSIS. AVOID BREATHING DUST. KEEP CONTAINER CLOSED. USE WITH ADEQUATE VENTILATION. CHRONIC: POSSIBLE CANCER HAZARD. CRYSTALLINE SILICA MAY CAUSE

CANCER BASED ON ANIMAL DATA.

PROLONGED/REPEATED EXPOSURE TO THIS

PRODUCT MAY ADVERSELY EFFECT THE

RESPIRATORY SYSTEM

# SECTION X - Transportation Data

Container Quantity 100

Unit of Measure LB

# **SECTION XI - Site Specific/Reporting Information**

Volatile Organic Compounds (P/G)

(

# **SECTION XII - Ingredients/Identity Information**

Ingredient #

1

Ingredient Name

SILICA, CRYSTALLINE - QUARTZ

CAS Number

14808607

NIOSH Number

VV7330000

Proprietary

NO

Percent

99.9

OSHA PEL

SEE TABLE Z3

ACGIH TLV

0.1 MG/M3 RDUST;9293

- 0

Recommended Limit

N/K

# ..... Bentonite clay, k-10

# Material Safety Data Sheet

## ACC# 96650

# Section 1 - Chemical Product and Company Identification

MSDS Name: Bentonite clay, k-10

Catalog Numbers: AC233170000, AC233170010, AC233170050

Synonyms: None.

**Company Identification:** 

Acros Organics N.V. One Reagent Lane Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01 For emergencies in the US, call CHEMTREC: 800-424-9300

# Section 2 - Composition, Information on Ingredients

| CAS#      | Chemical Name   | Percent | EINECS/ELINCS |
|-----------|-----------------|---------|---------------|
| 1318-93-0 | Mortmorillonite | 100.0   | 215-288-5     |

# Section 3 - Hazards Identification

## **EMERGENCY OVERVIEW**

Appearance: off-white powder.

**Caution!** May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.

Target Organs: None.

#### **Potential Health Effects**

Eye: Dust may cause mechanical irritation.

**Skin:** May cause skin irritation.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. The

toxicological properties of this substance have not been fully investigated.

Inhalation: Dust is irritating to the respiratory tract. The toxicological properties of this

substance have not been fully investigated.

Chronic: No information found.

# Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give

artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

# Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Substance is noncombustible.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not available.

Autoignition Temperature: Not available.

Explosion Limits, Lower: N/A

Upper: N/A

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

# Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8. **Spills/Leaks:** Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Provide ventilation.

# Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before

reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Storage: Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

#### Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low. **Exposure Limits** 

| Chemical Name   | ACGIH       | NIOSH       | OSHA - Final PELs |
|-----------------|-------------|-------------|-------------------|
| Mortmorillonite | none listed | none listed | none listed       |

OSHA Vacated PELs: Mortmorillonite: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

#### Section 9 - Physical and Chemical Properties

Physical State: Powder **Appearance:** off-white Odor: None reported. **pH:** Not available.

Vapor Pressure: Not available. Vapor Density: Not available. **Evaporation Rate:** Not available.

Viscosity: Not available. **Boiling Point:** Not available.

Freezing/Melting Point: Not available.

**Decomposition Temperature:** Not available.

**Solubility:** Not available.

Specific Gravity/Density:Not available. Molecular Formula: Not applicable. Molecular Weight: Not available.

#### Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, dust generation, strong oxidants.

Incompatibilities with Other Materials: Oxidizing agents.

Hazardous Decomposition Products: Irritating and toxic fumes and gases.

Hazardous Polymerization: Has not been reported.

#### Section 11 - Toxicological Information

RTECS#:

CAS# 1318-93 0 unlisted.

LD50/LC50: Not available.

Carcinogenicity:

CAS# 1318-93-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information available. **Teratogenicity:** No information available.

Reproductive Effects: No information available.

**Mutagenicity:** No information available. **Neurotoxicity:** No information available.

Other Studies:

#### Section 12 - Ecological Information

**Ecotoxicity:** No data available. No information available.

**Environmental:** No information found.

**Physical:** No information found. **Other:** No information available.

#### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.
RCRA U-Series: None listed.

#### Section 14 - Transport Information

|                | US DOT                                | Canada TDG                |
|----------------|---------------------------------------|---------------------------|
| Shipping Name: | Not regulated as a hazardous material | No information available. |
| Hazard Class:  |                                       |                           |
| UN Number:     |                                       |                           |
| Packing Group: |                                       |                           |

#### Section 15 - Regulatory Information

#### **US FEDERAL**

#### **TSCA**

CAS# 1318-93-0 is not listed on the TSCA inventory. It is for research and development use only.

#### **Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

#### **Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### **CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RQ.

#### **SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**Section 313** No chemicals are reportable under Section 313.

#### Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

#### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

#### STATE

CAS# 1318-93-0 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

#### California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

### European/International Regulations European Labeling in Accordance with EC Directives Hazard Symbols:

Not available.

Risk Phrases:

#### **Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 28A After contact with skin, wash immediately with plenty of water

#### WGK (Water Danger/Protection)

CAS# 1318-93-0: No information available.

#### Canada - DSL/NDSL

CAS# 1318-93-0 is listed on Canada's DSL List.

#### Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List** 

#### Section 16 - Additional Information

**MSDS Creation Date:** 12/15/1998 **Revision #4 Date:** 3/15/2007

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages



#### MATERIAL SAFETY DATA SHEET

FOR

#### ..... PORTLAND CEMENT

MSDS NUMBER:

**EFFECTIVE DATE: OCTOBER 1997** 

#### 1. PRODUCT/COMPANY IDENTIFICATION

Manufacturer's Name & Address:

Chemical Family:

Lehigh Portland Cement Company 7660 Imperial Way Allentown, PA 18195

Calcium Compounds

Chemical Name and Synonyms:

Portland Cement (CAS # 65997-15-1), Hydraulic

Cement

Telephone Number for Information: 800-523-5488

Trade Name and Synonyms:

Lehigh Portland Cement Types I, II, III, V Lehigh White Cement Types I, III, V Lehigh Colored Portland Cement

Lehigh Portland/Lime Cement Types N, S

#### 2. EMERGENCY AND FIRST AID

**EMERGENCY INFORMATION** 

Portland cement is a light gray or white powder. When in contact with moisture in eyes or on skin, or when mixed with water, portland cement becomes highly caustic (pH > 12) and will damage or burn (as severely as third-degree) the eyes or skin. Inhalation may cause irritation to the moist mucous membranes of the nose, throat and upper respiratory system or may cause or may aggravate certain lung diseases or conditions. Use exposure controls or personal protection methods described in Section 10.

EYES:

Immediately flush eye thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

SKIN:

Wash skin with cool water and pH-neutral soap or a mild detergent. Seek medical treatment if irritation or inflammation develops or persists. Seek immediate medical treatment in the event of burns.

INHALATION:

Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. Seek medical help if coughing and other symptoms do not subside. Inhalation of large amounts of portland cement require immediate medical attention.

INGESTION:

Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

#### 3. COMPOSITION INFORMATION

#### **DESCRIPTION:**

This product consists of finely ground portland cement clinker mixed with a small amount of gypsum (calcium sulfate dihydrate). The portland cement clinker is made by heating to a high temperature a mixture of substances such as limestone, sand, clay and shale. Portland cement is essentially hydraulic calcium silicates contained in a crystalline mass, not separable into individual components. Major compounds are:

 $3CaO \cdot SiO_2$  Tricalcium Silicate CAS #12168-85-3  $2CaO \cdot SiO_2$  Dicalcium Silicate CAS #10034-77-2  $3CaO \cdot Al_2O_3$  Tricalcium CAS #12042-78-3 Aluminate

.....

4CaO•Al<sub>2</sub>O<sub>3</sub>•Fe<sub>2</sub>O<sub>3</sub>

Tetracalcium aluminoferrite

CAS #12068-35-8

CaSO<sub>4</sub>•2H<sub>2</sub>O

Calcium Sulfate dihydrate

CAS #7778-18-9

(Gypsum)

m) (CAS #13397-24-

5)

| 4 ⊢ | IAZARD | OUS IN | GREDII | ENTS. |
|-----|--------|--------|--------|-------|

| 4. HAZARDOUS INGREDIENTS  |   |   |                                      |  |
|---|---|---|--------------------------------------|--|
|   | OSHA PEL                                | ACGIH TLV-TWA                                   | NIOSH REL                            |  |
| COMPONENT   | (8-Hour TWA)                            | (1995-1996)                                     | (8-Hour TWA)                         |  |
|   | Language                                | SANDARIAN AND AND AND AND AND AND AND AND AND A | 2                                    |  |
| Portland Cement (CAS #65997-15-1)                               | 5 mg respirable dust/m <sup>3</sup>     | 10 mg total dust/m <sup>3</sup>                 |                                      |  |
| 50 to 95% by weight   | 15 mg total dust/m <sup>3</sup>         |   |                                      |  |
| Calcium sulfate (CAS  | 5 mg respirable dust/m³                 | 10 mg total dust/m³                             |                                      |  |
| #7778-18-9) [Gypsum (CAS<br>#13397-24-5)]<br>0 to 10% by weight | 15 mg total dust/m <sup>3</sup>         |   |                                      |  |
| Iron oxide (CAS #1309-37-<br>1)<br>0 to 15% by weight           | 10 mg/m <sup>3</sup>                    | 5 mg/m <sup>3</sup>                             |                                      |  |
| Calcium carbonate (CAS  | 5 mg respirable dust/m³                 | 10 mg total dust/m³                             | p                                    |  |
| #1317-65-3)<br>0 to 5% by weight                                | 15 mg total dust/m³                     |   |                                      |  |
| Magnesium oxide (CAS #1309-48-4) 0 to 5% by weight              | 15 mg total dust/m <sup>3</sup>         | 10 mg total dust/m <sup>3</sup>                 |                                      |  |
| Calcium oxide (CAS #1306-78-8)<br>0 to 5% by weight             | 5 mg/m <sup>3</sup>                     | 2 mg/m³   |                                      |  |
| Crystalline silica (CAS<br>#14808-60-7)                         | 10 mg of respirable dust/m <sup>3</sup> | 0.10 mg respirable<br>quartz/m³                 | 0.05 mg respirable<br>quartz dust/m³ |  |

0 to 0.1% by weight

#### TRACE INGREDIENTS:

Due to the use of substances mined from the earth's crust, trace amounts of naturally occurring, potentially harmful constituents may be detected during chemical analysis. Portland cement may contain up to 0.75% insoluble residue. A small amount of this residue includes free crystalline silica. Portland cement also may contain trace (<0.05%) amounts of chromium salts or compounds (including hexavalent chromium) or other metals (including nickel compounds) found to be hazardous or toxic in some chemical forms. These metals are present mostly as trace substitutions within the principal minerals. Other trace constituents may include potassium and sodium sulfate compounds.

#### 5. HAZARD IDENTIFICATION

#### POTENTIAL HEALTH EFFECTS

NOTE: Potential health effects may vary depending upon the duration and degree of exposure. To reduce or eliminate health hazards associated with this product, use exposure controls or personal protection methods as described in Section 10.

#### EYE CONTACT:

(Acute/Chronic) Exposure to airborne dust may cause immediate or delayed irritation or inflammation of the cornea. Eye contact by larger amounts of dry powder or splashes of wet portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness.

#### SKIN CONTACT:

(Acute) Exposure to dry portland cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure.

(Chronic) Dry portland cement coming in contact with wet skin or exposure to wet portland cement may cause more severe skin effects, including thickening, cracking or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of chemical (caustic) burns.

(Acute/Chronic) Some individuals may exhibit an allergic response upon exposure to portland cement. The response may appear in a variety of forms ranging from a mild rash to severe skin ulcers.

INHALATION:

(Acute) Exposure to portland cement may cause irritation to the moist mucous membranes of the nose, throat and upper

respiratory system. Pre-existing upper respiratory and lung diseases may be aggravated by inhalation of portland cement.

(Chronic) Inhalation exposure to free crystalline silica may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or cause or aggravate other lung diseases or conditions.

INGESTION:

(Acute/Chronic) Internal discomfort or ill effects are possible

if large quantities are swallowed.

CARCINOGENIC POTENTIAL:

Portland cement is not recognized as a carcinogen by NTP. OSHA, or IARC. However, it may contain trace amounts of heavy metals recognized as carcinogens by these organizations. In addition, IARC classifies crystalline silica, a trace constituent, as a known human carcinogen (Group I). NTP has characterized respirable silica as "reasonably anticipated to be a carcinogen." (See also Section 13.)

6. PHYSICAL/CHEMICAL DATA

APPEARANCE/ODOR: Gray, white or

colored powder,

odorless

PHYSICAL STATE:

Solid (Powder)

**BOILING POINT:** 

> 1000fC

MELTING POINT:

Not applicable

VAPOR PRESSURE:

Not applicable

VAPOR DENSITY:

Not applicable

pH (IN WATER)

(ASTM D 1293-95)

12 to 13

SOLUBILITY IN WATER:

Slightly soluble (0.1% to

1.0%)

SPECIFIC GRAVITY

 $(H_2O = 1.0)$ :

3.15

**EVAPORATION RATE:** 

Not applicable

7. FIRE AND EXPLOSION

FLASH POINT:

None

LOWER **EXPLOSIVE** 

None

LIMIT:

**AUTO IGNITION** TEMPERATURE: Not combustible

UPPER

None

**EXPLOSIVE** 

LIMIT:

FLAMMABLE LIMITS

Not applicable

SPECIAL FIRE

None

**FIGHTING** 

HAZARDS:

PROCEDURES:

EXTINGUISHING Not combustible

UNUSUAL FIRE AND EXPLOSION

None

MEDIA:

HAZARDOUS

COMBUSTION PRODUCTS:

None

8. STABILITY AND REACTIVITY DATA

STABILITY:

Product is stable. Keep dry until used.

CONDITIONS TO AVOID:

Unintentional contact with water. Contact with water will result in hydration and produces (caustic) calcium hydroxide.

**INCOMPATIBILITY** 

Wet portland cement is alkaline. As such, it is incompatible with acids, ammonium salts

and aluminum metal.

HAZARDOUS DECOMPOSITION:

Will not occur.

HAZARDOUS POLYMERIZATION:

Will not occur.

- --

9. PRECAUTIONS FOR HANDLING, STORAGE AND DISPOSAL

HANDLING AND STORAGE

Keep dry until used. Handle and store in a manner so that airborne dust does not exceed applicable exposure limits. Use adequate ventilation and dust collection. Use exposure control and personal protection methods as described in Section 10.

SPILL:

Use dry clean-up methods that do not disperse dust into the air or entry into surface water. Material can be used if not contaminated. Place in an appropriate container for disposal or use. Avoid inhalation of dust and contact with skin and eyes. Use exposure control and personal protection methods as described in Section 10.

DISPOSAL:

Comply with all applicable local, state and federal regulations for disposal of unusable or contaminated materials. Dispose of packaging/containers according to local, state and federal regulations.

#### 10. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### RESPIRATORY PROTECTION:

Use local exhaust or general dilution ventilation to control dust levels below applicable exposure limits. Minimize dispersal of dust into the air.

If local or general ventilation is not adequate to control dust levels below applicable exposure limits or when dust causes irritation or discomfort, use MSHA/NIOSH approved respirators.

EYE PROTECTION:

Wear safety glasses with side shields or goggles to avoid contact with the eyes. In extremely dusty environments and unpredictable environments, wear tight-fitting unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when handling cement or cement containing products.

SKIN PROTECTION:

Wear impervious abrasion- and alkaliresistant gloves, boots, long-sleeved shirt,
long pants or other protective clothing to
prevent skin contact. Promptly remove
clothing dusty with dry portland cement or
clothing dampened with moisture mixed with
portland cement, and launder before re-use. If
contact occurs, wash areas contacted by
material with pH neutral soap and water.

#### 11. TRANSPORTATION DATA

Portland cement is not hazardous under U.S. DOT or TDG regulations.

#### 12. TOXICOLOGICAL AND ECOLOGICAL INFORMATION

For a description of available, more detailed toxicological and ecological information, contact Lehigh Portland Cement Company.

#### 13. OTHER REGULATORY INFORMATION

Status under US OSHA Hazard Communication Rule 29 CFR 1910.1200:

Portland cement is considered a hazardous chemical under this regulation and should be included in the employer's hazard communication program.

Status under CERCLA/Superfund, 40 CFR 117 and 302:

Not listed:

Hazard Category under SARA (Title III), Sections 311 and 312:

) | |

Portland cement qualifies as a hazardous substance with delayed health effects.

Status under SARA (Title III), Section 313:

Not subject to reporting requirements under

Section 313.

Status under TSCA (as of May 1997);

Some substances in portland cement are on

the TSCA inventory list.

Status under the Federal Hazardous Substances Act:

Portland cement is a hazardous substance subject to statutes promulgated under the

subject act.

Status under California Proposition 65:

This product contains crystalline silica, a substance known to the State of California to cause cancer. This product also may contain trace amounts of heavy metals known to the State of California to cause cancer, birth defects or other reproductive harm.

Status under Canadian Environmental Protection Act:

Not listed.

Status under Canadian WHMIS:

Portland cement is considered to be a hazardous material under the Hazardous

Products Act as defined by the Controlled Products Regulations (Class D2A, E - Corrosive Material) and subject to the requirements of WHMIS.

#### 14. OTHER INFORMATION

This MSDS provides information on various types of portland cement products. A particular product's composition may vary from sample to sample. The information provided herein is believed by Lehigh Portland Cement Company to be accurate at the time of preparation or prepared from sources believed to be reliable. Health and safety precautions in this data sheet may not be adequate for all individuals or situations. Users have the responsibility to comply with all laws and procedures applicable to the safe handling and use of the product, to determine the suitability of the product for its intended use, and to understand possible hazards associated with mixing portland cement with other materials. SELI.ER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY LEHIGH PORTLAND CEMENT COMPANY.

### SAFETY-KLEEN 105 SOLVENT RECYCLED MATERIAL SAFETY DATA SHEET FOR USA AND CANADA



**SECTION 1: PRODUCT AND COMPANY IDENTIFICATION** 

PRODUCT NAME: SAFETY-KLEEN 105 SOLVENT RECYCLED SYNONYMS: Parts

Washer Solvent; Petroleum Distillates; Mineral Spirits. PRODUCT CODE: 6614, 6617,

1011662, 1014662 PRODUCT USE: Cleaning and degreasing metal parts.

If this product is used in combination with other products, refer to the Material Safety Data Sheet for those products.

24-HOUR EMERGENCY PHONE NUMBER This number is for emergency MEDICAL AND TRANSPORTATION (SPILL): use only. If you desire non-emergency product information, please call a 1-800-468-1760 phone number listed below.

**SUPPLIER:** Safety-Kleen Systems, Inc. 5360 Legacy Drive Building 2, Suite 100 Plano, Texas 75024 USA

1-800-669-5740 www.Safety-Kleen.com TECHNICAL INFORMATION: 1-800-669-5740 Press

1 then 1, then Extension 7500 MSDS FORM NUMBER: 82310 ISSUE: October 13, 2008

ORIGINAL ISSUE: April 08, 1976 SUPERSEDES: October 21, 2005 PREPARED BY: Product

MSDS Coordinator APPROVED BY: MSDS Task Force

HASP – Site Investigation and Remediation Former Kerr-McGee Westlake Natural Gasoline Plant

\* - -1 000

#### **SECTION 2: HAZARDS IDENTIFICATION**

#### **EMERGENCY OVERVIEW**

#### **APPEARANCE**

Liquid, clear and green, mild hydrocarbon odor.

#### WARNING!

#### PHYSICAL HAZARDS

Combustible liquid and vapor.

#### **HEALTH HAZARDS**

May be harmful if inhaled.

May irritate the respiratory tract (nose, throat, and lungs), eyes, and skin.

May be harmful if swallowed.

Contains material that may cause central nervous system and kidney damage.

Contains material which may cause birth defects.

Suspect cancer hazard. Contains material (less than 0.2% by weight) which may cause.

cancer. Risk of cancer depends on duration and level of exposure.

#### **ENVIRONMENTAL HAZARDS**

Toxic to fish.

OSHA Regulated Chemicals Tetrachloroethylene (127-18-4)

Carcinogen

#### POTENTIAL HEALTH EFFECTS

**INHALATION** High concentrations of vapor may be harmful if inhaled. High concentrations of **(BREATHING)**: vapor or mist may irritate the respiratory tract (nose, throat, and lungs). High concentrations of vapor or mist may cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects. Massive acute overexposure may cause rapid central nervous system depression, sudden collapse, coma, and/or death.

**EYES:** May cause irritation.

**SKIN:** May cause irritation. Not likely to be absorbed in harmful amounts.

**INGESTION** May be harmful if swallowed. May cause throat irritation, nausea, vomiting, (SWALLOWING): and diarrhea. Breathing product into the lungs during ingestion or vomiting may cause lung injury and possible death.

MEDICAL CONDITIONS
AGGRAVATED BY

Individuals with pre-existing respiratory tract (nose, throat, and lungs), central nervous system, kidney, eye, and/or skin disorders

**EXPOSURE:** 

may have increased susceptibility to the effects of exposure.

**CHRONIC:** Prolonged or repeated inhalation may cause toxic effects as noted under **INHALATION (BREATHING)**. Prolonged or repeated exposure may cause central nervous system and kidney damage or have mutagenic effects. Prolonged or repeated eye contact may cause inflammation of the membrane lining the eyelids and covering the eyeball (conjunctivitis). Prolonged or repeated skin contact may cause drying, cracking, redness, itching, and/or swelling (dermatitis). Contains material which may cause birth defects.

**CANCER** This product contains tetrachloroethylene which may cause cancer. Risk of **INFORMATION:** cancer depends on duration and level of exposure.. For more information, see **SECTION 11: CARCINOGENICITY**.

Also see **SECTION 15**: **CALIFORNIA**.

POTENTIAL ENVIRONMENTAL EFFECTS Product is toxic to fish. Also see SECTION 12: ECOLOGICAL INFORMATION.

#### **SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

| CAS#       | Component                                   | Synonyms                             | Percent |
|------------|---|--------------------------------------|---------|
| 64742-47-8 | Distillates (petroleum), hydrotreated light | Not Available                        | 99-100  |
| 127-18-4   | Tetrachloroethylene CECTION 4. EU           | Perchloroethylene: Tetrachloroethene | 0-0.2   |

SECTION 4: FIRST AID MEASURES

INHALATION (BREATHING):

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Oxygen should only be administered by qualified personnel. Someone should stay with victim. Get medical attention if breathing difficulty persists.

EYES:

If irritation or redness from exposure to vapor develops, move away from exposure into fresh air. Upon contact, immediately flush eyes with plenty of lukewarm water, holding eyelids apart, for 15 minutes. Get medical attention.

SKIN:

Remove affected clothing and shoes. Wash skin thoroughly with soap and

water. Get medical attention. Wash contaminated clothing before reuse.

Consider discarding contaminated shoes.

INGESTION (SWALLOWING):

Do NOT induce vomiting. Immediately get medical attention. Call 1-800468-1760 for additional information. If spontaneous vomiting occurs, keep head below hips to avoid breathing the product into the lungs. Never give anything

by mouth to an unconscious person.

NOTE TO PHYSICIANS:

Treat symptomatically and supportively. Treatment may vary with condition

of victim and specifics of incident. Call 1-800-468-1760 for additional

information.

#### **SECTION 5: FIRE FIGHTING MEASURES**

HAZARDOUS COMBUSTION PRODUCTS:

Decomposition and combustion materials may be toxic. Burning may produce carbon monoxide and unidentified

organic compounds.

CONDITIONS OF FLAMMABILITY:

Heat, sparks, or flame.

PROTECTIVE EQUIPMENT

FOR FIREFIGHTERS:

A positive-pressure, self-contained breathing apparatus (SCBA) and full-body protective equipment are required for

fire emergencies.

**EXTINGUISHING MEDIA:** 

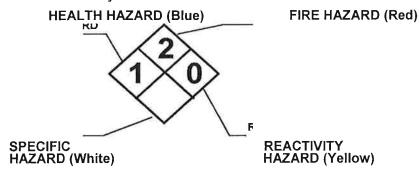
Carbon dioxide, regular foam, dry chemical, water spray, or

water fog.

NFPA 704 HAZARD IDENTIFICATION:

This information is intended solely for the use by individuals

trained in this system.



FIRE FIGHTING Keep storage containers cool with water spray. INSTRUCTIONS:

### FIRE AND EXPLOSION HAZARDS:

Vapor explosion hazard indoors, outdoors, or in sewers. Vapors may travel to ignition source and flashback. Vapors will spread along the ground and collect in low or confined areas. Run-off to sewer may create a fire hazard. Heated containers may rupture or be thrown into the air. "Empty" containers may retain residue and can be dangerous. Product is not sensitive to mechanical impact or static discharge.

#### **SECTION 6: ACCIDENTAL RELEASE MEASURES**

Remove all ignition sources. Do not touch or walk through spilled product. Stop leak if you can do it without risk. Wear protective equipment and provide engineering controls as specified in **SECTION** 8: **EXPOSURE CONTROLS/PERSONAL PROTECTION**. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area and avoid breathing vapor or mist. A vapor suppressing foam may be used to reduce vapors. Contain spill away from surface water and sewers. Contain spill as a liquid for possible recovery, or sorb with compatible sorbent material and shovel with a clean, sparkproof tool into a sealable container for disposal.

Additionally, for large spills: Water spray may reduce vapor, but may not prevent ignition in closed spaces. Dike far ahead of liquid spill for collection and later disposal.

There may be specific federal regulatory reporting requirements associated with spills, leaks, or releases of this product. Also see **SECTION 15**: **REGULATORY INFORMATION**.

#### **SECTION 7: HANDLING AND STORAGE**

#### HANDLING:

Keep away from heat, sparks, or flame. Where flammable mixtures may be present, equipment safe for such locations should be used. Use clean, sparkproof tools and explosion proof equipment. When transferring product, metal containers, including trucks and tank cars, should be grounded and bonded. Do not breathe vapor or mist. Use in a well ventilated area. Avoid contact with eyes, skin, clothing, and shoes. Do not smoke while using this product.

#### SHIPPING AND STORING:

Keep container tightly closed when not in use and during transport. Store containers in a cool, dry place. Do not pressurize, cut, weld, braze, solder, drill, or grind containers. Keep containers away from heat, flame, sparks, static electricity, or other sources of ignition. Empty product containers may retain product residue and can be dangerous. See **SECTION 14:** 

TRANSPORTATION INFORMATION for Packing Group information.

#### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**EXPOSURE GUIDELINES:**Component Exposure Limits

Distillates (petroleum), hydrotreated light (64742-47-8)

ACGIH: 100 ppm TWA (related to Stoddard solvent) OSHA: 100 ppm TWA; 525 mg/m3 TWA (related to Stoddard solvent) NIOSH: 350 mg/m3 TWA (related to Stoddard solvent)

1800 mg/m3 Ceiling (15 min) (related to Stoddard solvent)

Tetrachloroethylene (127-18-4)

ACGIH: 25 ppm TWA 100 ppm STEL OSHA: 25 ppm

TWA; 170 mg/m3 TWA

**ENGINEERING** Provide general ventilation needed to maintain concentration of vapor or **CONTROLS**: mist below applicable exposure limits. Where adequate general ventilation is unavailable, use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below applicable exposure limits. Where explosive mixtures may be present, equipment safe for such locations should be used.

#### PERSONAL PROTECTIVE EQUIPMENT

**RESPIRATORY**Use NIOSH-certified P- or R- series particulate filter and organic vapor cartridges when concentration of vapor or mist exceeds applicable exposure limits. Protection provided by air purifying respirators is limited. Do not use N-rated respirators. Selection and use of respiratory protective equipment should be in accordance in the USA with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.

**EYE** Where eye contact is likely, wear chemical goggles; contact lens use is not **PROTECTION**: recommended.

**SKIN** Where skin contact is likely, wear chemical impervious protective gloves; **PROTECTION**: use of natural rubber (latex), polyvinyl chloride (PVC) or equivalent gloves is not recommended.

To avoid prolonged or repeated contact with product where spills and splashes are likely, wear appropriate chemical-resistant faceshield, boots, apron, coveralls, long sleeve shirts, or other protective clothing.

PERSONAL HYGIENE:

Use good personal hygiene. Wash thoroughly with soap and water after handling product and before eating, drinking, or using tobacco products. Clean affected clothing, shoes, and protective equipment before reuse. Discard affected clothing, shoes, and/or protective equipment if they cannot be thoroughly cleaned. Discard leather articles, such as shoes, saturated with this

product.

OTHER PROTECTIVE EQUIPMENT:

Where spills and splashes are likely, facilities storing or using this product should be equipped with an emergency eyewash and shower, both equipped with clean water, in the immediate work area.

#### **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE,

APPEARANCE, AND ODOR:

ODOR THRESHOLD:

Liquid, clear and green, mild hydrocarbon odor,

30 ppm (based on Stoddard Solvent)

**MOLECULAR WEIGHT:** 

Not available.

SPECIFIC GRAVITY:

 $0.77 \text{ to } 0.80 \text{ at } 60^{\circ}\text{F} (15.6^{\circ}\text{C}) \text{ (water = 1)}$ 

**DENSITY:** 

6.4 to 6.7 LB/US gal (770 to 800 g/l)

**VAPOR DENSITY:** 

5 (air = 1) (approximately)

VAPOR PRESSURE:

0.4 mm Hg at 68°F (20°C) (approximately) 1.0 mm Hg at 100°F (37°C) (approximately)

**BOILING POINT:** 

310°F (155°C) (initial)

FREEZING/MELTING POINT:

-45°F (-43°C) (initial)

pH:

Not applicable.

**EVAPORATION RATE:** 

0.1 (butyl acetate = 1) (based on Stoddard Solvent)

**SOLUBILITY IN WATER:** 

Insoluble.

**FLASH POINT:** 

105°F (40°C) Tag Closed Cup

FLAMMABLE LIMITS IN AIR:

LOWER: 0.7 VOL% (minimum) UPPER: 5 VOL%

(maximum)

AUTOIGNITION TEMPERATURE: HASP – Site Investigation and Remediation

410°F (210°C) (minimum)

Former Kerr-McGee Westlake Natural Gasoline Plant

**% VOLATILE:** 100 WT%; 6.4 to 6.7 LB/US gal; 770 to 800 g/l As per 40 CFR Part 51.100(s).

#### **SECTION 10: STABILITY AND REACTIVITY**

STABILITY:

Stable under normal temperatures and pressures.

**CONDITIONS TO** 

**AVOID:** 

Avoid heat, sparks, or flame.

**INCOMPATIBILITY** 

Avoid acids, alkalies, oxidizing agents, reducing agents, reactive metals

or reactive halogens.

REACTIVITY:

PRODUCTS:

Polymerization is not known to occur under normal temperature and

pressures. Not reactive with water.

HAZARDOUS DECOMPOSITION None under normal temperatures and pressures. See also **SECTION 5**:

HAZARDOUS COMBUSTION PRODUCTS.

**SECTION 11: TOXICOLOGICAL INFORMATION** 

TOXICITY DATA: Component Analysis - LD50/LC50 Distillates (petroleum), hydrotreated light (64742-47-8)

Inhalation LC50 Rat: >5.2 mg/L/4H Oral LD50 Rat:>5000 mg/kg Dermal LD50 Rabbit:>2000 mg/kg

Tetrachloroethylene (127-18-4)

Inhalation LC50 Rat: 4000 ppm/4H Oral LD50 Rat:2629 mg/kg Dermal

LD50 Mouse:2800 mg/kg

ACUTE EFFECTS: May irritate the respiratory tract (nose, throat, and lungs), eyes, and skin. High concentrations of vapor may be harmful if inhaled. High concentrations of vapor or mist may irritate the respiratory tract (nose, throat, and lungs). High concentrations of vapor or mist may cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects. Massive acute overexposure may cause rapid central nervous system depression, sudden collapse, coma, and/or death. May be harmful if swallowed. May cause throat irritation, nausea, vomiting, and diarrhea. Breathing product into the lungs during ingestion or vomiting may cause lung injury and possible death.

**REPEATED DOSE EFFECTS:** Based on best current information, there is no known reproductive toxicity associated with this product. Also see **SECTION 15: CALIFORNIA**.

Tetrachloroethylene has demonstrated animal effects of teratogenicity. Based on best current information, the other component listed in **SECTION 2** is not a teratogen.

Based on best current information, there is no known human sensitization associated with this product.

Tetrachloroethylene has demonstrated human effects of mutagenicity. Based on best current information, the other component listed in **SECTION 2** is not a mutagen.

CARCINOGENICITY: Tetrachloroethylene is categorized by IARC as probably carcinogenic to humans (Group 2A). Tetrachloroethylene is listed by NTP as having sufficient evidence of carcinogenicity in experimental animals, but is not known or reasonably anticipated to be a human carcinogen according to NTP. Tetrachloroethylene is categorized by ACGIH as a confirmed animal carcinogen with unknown relevance to humans (A3).

Also see **SECTION 3: CANCER INFORMATION** and **SECTION 15: CALIFORNIA**.

TARGET ORGAN EFFECTS: system and kidney damage.

Prolonged or repeated exposure may cause central nervous

#### **SECTION 12: ECOLOGICAL INFORMATION**

**ECOTOXICITY:** 2.9 mg/L 96 hour LC<sub>50</sub> Rainbow trout, Donaldson trout (Oncorhynchus mykiss) (based on Petroleum distillates, hydrotreated light).

Component Analysis - Ecotoxicity - Aquatic Toxicity

Distillates (petroleum), hydrotreated light (64742-47-8) Test & Species Conditions

96 Hr LC50 Pimephales promelas 45 mg/L flow-through 96 Hr LC50 Lepomis macrochirus 1740 mg/L static

Tetrachloroethylene (127-18-4) Test & Species Conditions

96 Hr LC50 Oncorhynchus mykiss 5.28 mg/L 12 °C 96 Hr LC50 Pimephales promelas 13.4 mg/L flow-through 96 Hr LC50 Lepomis macrochirus 12.9 mg/L static 96 Hr LC50 Oncorhynchus mykiss 4.99 mg/L flow-through 96 Hr EC50 Selenastrum capricornutum >816 mg/L

PERSISTENCE/DEGRADABILITY: No information available for the product.

BIOACCUMULATION/ACCUMULATION: No information available for the

product.

MOBILITY IN ENVIRONMENTAL No information available for the product. MEDIA: OTHER ADVERSE EFFECTS: Product is toxic to fish. Also see SECTION 12:

**ECOLOGICAL INFORMATION.** 

OCTANOL/WATER Not available. PARTITION COEFFICIENT:

**VOLATILE ORGANIC COMPOUNDS:** 100 WT%; 6.4 to 6.7 LB/US gal; 770 to 800 g/l As per 40 CFR Part 51.100(s).

#### **SECTION 13: DISPOSAL CONSIDERATIONS**

**DISPOSAL:** Dispose in accordance with federal, state, provincial, and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal.

USEPA WASTE CODE(S):

D001, D018, D039, D040. Based on available data, this information applies

to the product as supplied to the user. Processing, use, or contamination by the user may change the waste code applicable to the disposal of this

**SECTION 14: TRANSPORT INFORMATION** 

DOT:

NON-BULK PACKAGES (<119 Gallons) (Non-USEPA Hazardous

Waste Only; By Highway Only):

\*49 CFR 173.150(f)(1,2)

\*Proper Shipping Name: Cleaning compounds, liquid – NOT-USDCT Regulated Material Hazard Class: N/A UN/NA#: N/A Packing Group:

N/A Required Labels: NONE

BULK PACKAGES (>119 Gallons)(By Highway or Rail Only):

\*\*49 CFR 173.150(f)(1)

\*\*Proper Shipping Name: Combustible liquids, N.O.S. (Petroleum distillates) Hazard Class: Combustible UN/NA: NA1993 Packing Group: III Required PLACARD(S): COMBUSTIBLE, NA 1993

TDG:

SMALL MEANS OF CONTAINMENT (<119 Gallons)(By Highway, Rail,

or Vessel within Canada)

\*See TDGR 1.33

\*Proper Shipping Name: Cleaning compounds, liquid – NON-TDG Regulated Material Hazard Class: NONE UN/NA#: NONE Packing

Group: NONE Required Label(s): NONE

LARGE MEANS OF CONTAINMENT (>119 Gallons)(Or <119 Gallons

– by Air):

Proper Shipping Name: Petroleum Distillates, n.o.s. Hazard Class: 3 UN/NA#: UN 1268 Packing Group: III Required

PLACARD(S): FLAMMABLE LIQUID

**EMERGENCY RESPONSE** 128 **GUIDE NUMBER**: Reference North American Emergency Response Guidebook

#### **SECTION 15: REGULATORY INFORMATION**

**USA REGULATIONS** 

OSHA

OSHA Regulated Chemicals Tetrachloroethylene (127-18-4) Present

(Select Carcinogen)

SARA SECTIONS 302 AND 304: Based on the ingredients listed in **SECTION 2**, this product does not contain any "extremely hazardous substances" listed pursuant to Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 302 or Section 304 as identified in 40 CFR Part 355, Appendix A

and B.

SARA SECTIONS 311 AND 312: This product poses the following health hazards as defined in 40 CFR Part 370 and is subject to the requirements of sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA): Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard Fire

Hazard

**SARA SECTION** 

313:

This product does contain a "toxic" chemical subject to the requirements of section 313 of Title III of the Superfund Amendments and Reauthorization

Act of 1986 (SARA) and 40 CFR Part 372.

Component CAS Tetrachloroethylene 127-18-4

CERCLA:

Based on the ingredients listed in **SECTION 2**, this product contains the

following "hazardous substance" listed under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) in 40 CFR Part 302, Table 302.4 with the following reportable

quantities (RQ):

Component CAS

Tetrachloroethylene 127-18-4

**RQ** 100 LBS (45.4 kg)

TSCA:

All the components of this product are listed on, or are automatically

included as "naturally occurring chemical substances" on, or are exempted

from the requirement to be listed on, the TSCA Inventory.

TECHNICAL INFORMATION: 1-800-669-5740 Press 1 then 1, then Extension 7500

MSDS FORM NUMBER: 82310

ISSUE: October 13, 2008

ORIGINAL ISSUE: April 08, 1976

SUPERSEDES: October 21, 2005

PREPARED BY: Product MSDS Coordinator

APPROVED BY: MSDS Task Force

)M

**CALIFORNIA:** This product.may contain a detectable amount of benzene CAS 71-43-2, p-dichlorobenzene CAS 106-46-7, methylene chloride CAS 75-09-2, perchloroethylene CAS 127-18-4 and trichloroethylene CAS 79-01-6. WARNING: These chemicals are known to the State of California to cause cancer.

Revision 10/08; MSDS Form No. 82310 - Page 1 of 13

This product may contain a detectable amount of benzene CAS 71-43-2 and toluene CAS 108-88-3. WARNING: These chemicals are known to the State of California to cause birth defects or other reproductive harm.

#### **CANADIAN REGULATIONS**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all information required by the CPR.

**CANADIAN** All the components of this product are listed on, or are automatically **ENVIRONMENTAL** included as "substance occurring in nature" on, or are exempted from the **PROTECTION** requirements to be listed on, the Canadian Domestic Substances List **ACT (CEPA)**: (DSL).

#### **SECTION 16. OTHER INFORMATION**

**REVISION INFORMATION:** Regulatory update, update product name and composition.

This MSDS has been revised in the following sections: Section 1 (Dates), Section 2 (Composition updated), Section 5 (Fire Fields), Section 8 (Exposure Limits added), Section 11 (Toxicology fields updated), Section 12 (Ecotoxicity and VOC Information, fields updated), Section 16 (Revision

Information).

**LABEL/OTHER INFORMATION:** This product is United States Department of Agriculture

(USDA) approved, ETL classified and Factory Mutual (FM)

approved.

User assumes all risks incident to the use of this (these) product(s). To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. No representations or warranties, either express or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which information refers. The data contained on this sheet apply to the product(s) as supplied to the user.



4-----

# Attachment C Equipment Safety Cards



#### **SAFETY CARD**

### **COMPRESSORS**

#### **Objective / Overview:**

Compressors should be used with extreme caution in order to prevent personal injury. When using a compressor it's important to follow the manufacturer's instructions to avoid injuring someone or damaging your compressor. Allow only trained, authorized personnel to operate the compressor. Along with training, other safety measures include: proper maintenance of equipment and personal protective equipment.

#### **Safe Operating Guidelines:**

Follow manufactures recommended operating instructions, every compressor is not the same. Maintain adequate ventilation. Gas and Diesel powered generators emit carbon monoxide (CO). Never operate a fuel-powered compressor in an enclosed building without proper ventilation. Turn the compressor off to refuel. Gasoline and its vapors may ignite if they come into contact with hot components or an electrical spark, store fuel in a properly designed container in a secure location. Operators shall perform a pre-operational check of all air hoses, couplings, and connections to determine if leakage or other damage exists. Tag unsafe equipment and take out of service immediately. Decompress air from the compressor prior to removing any caps or air equipment attachments such as jackhammers, drills, etc. Keep oil and flammable material clear of air fittings and joints. Make sure connections are secure to avoid a hose coming loose during use. To avoid a shock, make sure that your hands are dry and you're standing in a dry place whenever you operate the compressor. Use only UL-listed, three-prong extension cords. Be sure the extension cord is the proper size (wire-gauge) to handle the electric load that will be plugged into it.

#### **Potential Hazards:**

- Burns from contact with the hot muffler or engine
- Shocks/electrocution
- Noise exposure
- Inhaling exhaust gases, CO
- Contact with pressurized air

#### **Training Requirements:**

- Review of Applicable SOPs (SH&E 611, Electrical Safety-Portable Electrical Equipment & SH&E 618, Compressed Gasses
- Demonstrated knowledge on the use of the compressor
- Review of manufacturers operating guidelines

#### Personal Protective Equipment (Level D PPE) and:

- Leather Gloves
- Hearing Protection
- Long Sleeve Shirt (e.g., to shield from burns, etc.)

#### **Other Safety Tips:**

• Have a Class A:B:C fire extinguisher readily available at all times.





## SAFETY CARD GENERATOR

#### **Objective / Overview:**

Portable generators should be used with extreme caution in order to prevent personal injury. When using a portable generator it's important to follow the manufacturer's instructions to avoid injuring someone or damaging your generator or appliances. Allow only trained, authorized personnel to operate the generator. Along with training, other safety measures include: proper maintenance of equipment and personal protective equipment.



#### **Safe Operating Guidelines:**

Follow manufacturer's recommended operating instructions, every generator is not the same. Maintain adequate ventilation. Generators emit carbon monoxide (CO). Never operate a generator in an enclosed building without proper ventilation. Turn the generator off to refuel. Gasoline and its vapors may ignite if they come into contact with hot components or an electrical spark, store fuel in a properly designed container in a secure location. To avoid a shock, make sure that your hands are dry and you're standing in a dry place whenever you operate the generator. Turn off equipment and lights supplied by the generator until it is running. Use the right extension cord. Use only UL-listed, three-prong extension cords. Be sure the extension cord is the proper size (wire-gauge) to handle the electric load that will be plugged into it. Make sure the generator is properly grounded prior to each use. If you intend on using a portable generator to tie into the wiring of an existing structure this shall be done only by a licensed electrician.

#### **Potential Hazards:**

- Burns from contact with the hot muffler or engine
- Shocks/electrocution
- Noise exposure
- Inhaling exhaust gases, CO

#### **Training Requirements:**

- Review of Applicable SOPs (SH&E 611, Electrical Safety-Portable Electrical Equipment)
- Demonstrated knowledge on the use of a generator
- Review of manufacturers operating guidelines

#### Personal Protective Equipment (Level D PPE ) and:

- Leather Gloves
- Hearing Protection
- Long Sleeve Shirt (i.e., to shield from burns, etc.)

#### **Other Safety Tips:**

• Have a Class A:B:C fire extinguisher readily available at all times.

## FIELD Environmental Instruments Equipment Rental and Field Supplies

MIE

MiniRam PDM-3
Aerosol Monitor

"Your Needs Are Our Business"

Toll-Free 800-393-4009



The MINIRAM (Miniature Real-Time Aerosol Monitor) Model PDM-3 is an ultra-compact personal size airborne particulate monitor. The MINIRAM can be used to measure the concentration of all forms of aerosol: dusts, fumes, smokes, fogs, etc. It's small size and weight, and concentration-averaging features permits its use as a personal exposure monitor.

Alternatively it can be used as an area monitor for both indoor and ambient air situations. Test chamber monitoring, visibility measurements, cloud detection, aerosol dispersion studies, etc. are additional applications of the MINIRAM.

#### **SPECIFICATIONS**

Measurement Ranges: Precision and Stability (for 10 sec.) readings:

Precision and Stability for time-averaged measurements:

Temperature Coefficient: Readout Solution:

Total Measurement Period:
Particle size range of max response:
Data Storage:

Real-Time Outputs: Power Source:

**Charge Time:** 

Nominal Battery Voltage: Average Battery Voltage:

Operating Time w/ full battery charge: Intrinsic Safety:

0.01 to 10 mg/m3 and 0.1 to 100 mg/m3 +/- 0.03 mg/m3

+/- 0.02 mg/m3 (for 1 min. averaging) +/-0.006 mg/m3 (for 10 min averaging)

+/- 0.003 mg/m3 (for 1 hr averaging) +/- 0.001 mg/m3 (for 8 hr averaging)

0.005 mg/m3 per C (typical) 0.02 mg/m3 or 0.1 mg/m3 depending on automatically selected range (3 digit LCD) 8 1/3 hr, or indefinite 8 1/3 cycles 0.1 or 10 mm in diameter

7 concentration averages, sampling periods in min (3 significant figure resolution), off time (10 minute resolution) identification number, zero value, programmable code and check sum

Analog (0 to 1.5V full scale) and digital ASCII Rechargeable ni-cad batteries

12 hrs per charge

7.5 V 40 mA 10 hrs

MSHA approval 2G-3532-0

99 Miller Avenue

Braddock, PA 15104

800-393-4009

Fax 412-271-5083

in fo @ field environmental.com

Visit us soon on the web www.

Inquiries and orders 800-393-4009



US: 1 800-242-3910 UK: +44 (0) 845 270 2707 Singapore: +65 6545-9350 www.ashtead-technology.com



#### **MIE Personal Dataram Model PDR 1000AN**

The world's smallest and most versatile direct reading personal aerosol monitor, the personalDataRAM measures concentrations of dust, smoke, mists, and fumes in real time, and sounds an on-board audible alarm when a user-defined level is exceeded. The personalDataRAM is ideal for monitoring personal breathing zones, plant walk-through surveys, worker exposure or for indoor air quality monitoring. The instrument attaches easily to a belt or shoulder strap, and the rental unit comes with software.

#### **Key Features**

Integral datalogging

Extremely compact and rugged.

| Technical Specifications            |   |  |  |
|-------------------------------------|---|--|--|
| Title                               | Value   |  |  |
| Concentration Measurement Range     | 0.001 to 400 mg/m3  |  |  |
| Resolution                          | 0.1% of reading or 0.001 mg/m3 whichever is greater   |  |  |
| Accuracy                            | ± 5% of reading ± precision   |  |  |
| Particle Size Range of Max Response | 0.1 to 10 μm  |  |  |
| Datalogging                         | 13,000 data points, with average concentration, time/date and data point number for each, stored in 1 to 99 data sets |  |  |
| Output                              | RS-232 port   |  |  |
| Power                               | 9V alkaline battery, 24 hours operation or AC operation with adapter  |  |  |

| Dimensions |                  |                    |          |         |
|------------|------------------|--------------------|----------|---------|
| Title      | (mm)             | (inch)             | (kg)     | (lbs)   |
|            | 152 x 91 x 63 mm | 6.0" x 3.6" x 2.5" | 0.510 kg | 1.1 lbs |



## SAFETY CARD PRESSURE WASHERS

#### **Objective / Overview:**

High pressure washers can operate up to pressures of 5,000 psi and come in a variety of types ranging from gas operated to electrical. If not used correctly and safely, pressure washers can be a dangerous piece of work equipment. Earth Tech only allows trained, authorized personnel to operate the high pressure washers. Along with training, other safety measures include: reviewing the manufacturers instructional booklet, proper maintenance of equipment, and personal protective equipment.

#### **Safe Operating Guidelines:**

The gun valve must always be pointed at the work area, NEVER point the gun valve at yourself or another person. High pressure washers shall be used to clean or decontaminate equipment, surfaces or structures only. High pressure washers WILL NOT be used to clean or decontaminate workers or personal protective equipment while it is being worn. Always set the tripper safety lock when the gun valve is not in use.

#### **Potential Hazards:**

- Kickback Sudden and violent reverse movement of the gun
- Flying debris
- Slips and trips on wet surfaces and hoses
- Exhaust fumes/carbon monoxide (CO) in enclosed spaces
- Severe cuts

#### **Training Requirements:**

- Review of Applicable SOPs (SH&E 613, *Pressure Washers*)
- Demonstrated knowledge on the use of a pressure washer
- Review of manufacturers operating guidelines

#### Personal Protective Equipment (Level D PPE ) and:

- Hard hat with faceshield
- Heavy gloves
- Hearing protection
- PVC (or equivalent) rain suit

#### **Other Safety Tips:**

- Never fill a pressure washer fuel tank with fuel while the engine is running or if the engine is still hot
- Non-operators must remain a minimum of 25 feet from the operator
- High pressure washing equipment should be cleaned often to avoid dirt buildup, especially around the trigger and guard area
- Always set the trigger safety lock when the gun valve is not in use
- Relieve the pressure in the system before coupling and uncoupling hoses
- Visually inspect the full length of high pressure discharge hose and inspect other high pressure fluid-handling components for abrasions or cuts, damage caused by exposure to chemicals and for damage caused by kinks in the hose





## SAFETY CARD UTILITY KNIVES / RAZORS

#### **Objective / Overview:**

Utility knives serve a variety of purposes at worksites, and can be a useful tool, when used safely and correctly. Learning proper positioning and correctly using a utility knife will drastically reduce the potential of cut related injuries.

#### **Safe Operating Guidelines:**

Always be sure that knives are sharp and not dull. A dull blade will require more force to cut, increasing the likelihood of slipping. Be sure to blade is seated in the frame of the knife correctly, closed, and fastened together properly. Always keep body parts away from the cut line, (e.g., fingers), and ensure that the material being cut is on firm ground and not against a body part (cutting rope against your leg). Always pull the knife, never push the knife (the blade may break, and momentum could cause the body to come into contact with broken blade). Always retract the blade when not in use.

#### **Potential Hazards:**

- Lacerations from direct contact with the blade
- Lacerations from blade breaking or shattering
- Ergonomics



#### **Training Requirements:**

- Review of Applicable SOPs (SH&E 610, Hand and Power Tools)
- Demonstrated knowledge on the safe use of a utility knives
- Review and follow manufacturers operating guidelines for specialized or unusual knives.

#### Personal Protective Equipment (Level D PPE) and:

• Cut resistant gloves (Kevlar, thick leather, etc.).

#### **Other Safety Tips:**

- Purchase safety equipped utility knives with guarding or automatically retracting blades
- Replace dull blades When knife begins to tear rather than cut, it is a good indicator the blade is dull.
- Always wear a cut resistant glove on your free hand.
- Always use the right tool for the job NEVER use the blade as a screwdriver or prying tool.
- When using a knife to cut thicker materials, use several passes. Increased force on the blade can cause it to stray from the intended cut path, or break the blade.
- When changing blades, always handle from the non-sharp side. Cover blade with duct tape and dispose.
- Use an alternate tool when possible (scissors, wire cutters, etc.)



# Attachment D Site-Specific Spill Reporting Card

### ENVIRONMENTAL RELEASE/SPILL EMERGENCY PROCEDURES

## In the event of an environmental release or spill (REGARDLESS OF QUANTITY), the following procedures will be followed:

- 1. Secure the area and contain the release or spill, if possible.
- 2. If emergency services are required, call appropriate emergency services numbers to report the quantity and contents of the release or spill.
- 3. Contact the AECOM Project Manager, Kurt Webber, at 972-735-7067 (office) or 817-773-6921 (cell) to report the details of the incident.
- 4. Notify the Site Supervisor, Kurt Webber, at 972-735-7067 (office) or 817-773-6921 (cell) to report the contents and quantity of the release or spill.
- 5. Notification of the Anadarko Petroleum Corporation Project Manager Ross Haeberle at 832-636-2882 (office) or 936-446-8430 (cell) to report the contents and quantity of the release or spill.
- 6. Call the AECOM Incident Reporting Line at 800-348-5046 and Dan Schillings at 210-601-4129 to report the incident.
- 7. If the release or spill meets state, federal or local reporting requirements <u>and</u> AECOM is directed by the Anadarko team leaders, report the release or spill to the appropriate regulatory agencies (see other side).
- 8. Provide a written statement summarizing the incident to your Supervisor to be included in the Supervisor's Report of Incident.

### REGULATORY AGENCY CONTACT NUMBERS FOR REPORTING CHEMICAL SPILLS AND RELEASES

When a chemical spill or release occurs in Texas, there are a number of reporting and notification requirements that must be followed by the agency or individual responsible for the spill. Therefore, prior to notifying a regulatory agency(s) of a release or spill, the appropriate regulations should be consulted to determine reportable quantities, reporting requirements, scenarios, notification timelines, required documentation and/or agencies to contact. In some cases, reporting or notification of a spill or release to a regulatory agency(s) may not be required.

A list of regulatory agencies and contact numbers is provided below, but is not inclusive of all release or spill scenarios, such as transportation accidents involving hazardous substances, releases to air or releases from oil and gas wells or pipelines. In some cases, several regulations overlap requiring notification to multiple agencies. However, in all cases, the Anadarko team leaders should be consulted first prior to notification of a regulatory agency.

| Agency  | Phone #                             | Examples of When To Call   |
|---|-------------------------------------|--|
| National Response Center (NRC)  | 1-800-424-8802                      | Releases from a fixed facility that exceed the RQ for that specific chemical (per SARA Title III List of Lists); immediate verbal notification   |
|   |                                     | Releases of petroleum products and certain hazardous<br>substances listed under the Federal Clean Water Act (40CFR<br>Part 116)  |
|   |                                     | <ul> <li>Releases of hazardous substances from regulated storage tanks<br/>in excess of RQ (40 CFR Part 302.6); report within 24 hours</li> </ul>  |
| Texas Commission on Environmental<br>Quality (TCEQ) 24-hr Emergency<br>Response Phone Number. | 1-800-832-8224                      | <ul> <li>Releases from a fixed facility that exceeds the RQ for that<br/>specific chemical (per SARA Title III List of Lists);<br/>immediate verbal notification followed by written</li> </ul>  |
|   |                                     | Release of hazardous waste stored in tanks at RCRA permitted facilities and large quantity generators greater than one pound; written notification within 30 days  |
|   |                                     | • Releases of any chemical, oil, petroleum product, sewage, etc., no matter how small, which may enter waters of the state (including surface water, ground water and dry gullies or storm sewers leading to surface water); immediate verbal notification; written notification within 5 days |
|   |                                     | <ul> <li>Releases of petroleum products and certain hazardous<br/>substances listed under the Federal Clean Water Act<br/>(40CFR Part 116)</li> </ul>  |
| Nolan County Texas, Emergency<br>Management Coordinator                                       | 325-235-4304<br>Mr. Nolan<br>Madden | • Petroleum releases of 25 gallons or more (or that cause a sheen on nearby surface waters) from regulated storage tanks; verbal notification within 24 hours  |
|   | Spill Phone:<br>911                 | <ul> <li>Releases of hazardous substances from regulated storage<br/>tanks in excess of RQ (40 CFR Part 302.6); report within<br/>24 hours</li> </ul>  |
|   |                                     | After-hours contact the TCEQ's Emergency Spill<br>Reporting Line   |
| TCEQ Regional Office:   | 325-698-9674                        |  |
| Nolan County (TCEQ Region 3, Abilene, Texas)  |                                     |  |

# Attachment E Client-Specific Health and Safety Guidelines

#### SafeLandUSA Course Syllabus

#### 1. Incident Reporting and Investigation

Responsibility for reporting

Definition of an incident to report

How to report an incident

Types of incidents

Purpose of incident investigation

Explain why incidents need investigation

#### 2. Accident Prevention Signs and Tags

Types and meaning of signs and tags

Definition and design

#### 3. Hand Safety

General safety rules "Right tools for the job"

Types of cutting tools, Pocket Knife, Machete, Bush Knife, Hatchets

Causes of hand injuries

#### 4. Material Handling

Materials Handling Equipment

Forklift Safety

Cranes, Rigging & Tag Lines

Working with Hand tools

Cheater Bar/Pipe

Personal Lifting Introduction

Why back injuries occur - Back Injury Prevention

Lifting Safely - Safety Tips for Lifting

Alternatives to Lifting

#### 5. Behavioral Safety

Overview

Roles and Responsibilities - Behavior Based Safety

Making an Observation

#### 6. First-Aid/CPR/AED Considerations

Respond only to level trained and know who is trained

Location of Emergency Contact Numbers and Equipment

Bloodborne Pathogens

#### 7. Confined Space

Hazards of Confined Spaces

Roles and Responsibilities

Categories: Permit Required vs. Non-Permit Required

#### 8. Lockout/Tagout

Overview of Lockout/Tagout

Identifying Hazardous Energy

Roles and Responsibilities

Procedures - Lockout Only, Tagout Only, Group Lockout, Removal of Locks and Tags

#### 9. Drug and Alcohol / Substance Abuse

Government Regulations / Company Requirements

Testing

Supervisor Training Requirements: Reasonable Suspicion

Employee Awareness: Effects and Consequences

#### 10. Hazard Communication

Overview of Hazard Communication

Identification of Chemicals: MSDS, Labels and Warning, Chemical Inventory

**Training Requirements** 

#### 11. Electrical Safety

Overview of Electrical Safety

Causes of Electrical Accidents

Results of Unsafe Work Practices

Energized vs. De-energized

Working Near Exposed De-energized Parts

Working Near Energized Equipment

Overhead Line Safety

Portable Electrical Equipment

Inspecting Welding Leads / Electrical Cords / GFCI

Electrical PPE

#### 12. Intervention / Stop Work Authority

Overview

Management Leadership / Support of Intervention

Describe an individual's responsibilities to do interventions

Explanation of how interventions are used (Examples)

#### 13. Fire Prevention and Portable Fire Extinguishers

Overview of Fire Protection, Prevention, and Detection

Respond only to level trained and know who is trained

Elements/Causes of Fire

Fire Classification

Extinguishing Methods / Types of Extinguishers

#### 14. Walking Working Surfaces

Overview

Guarding Floor and Wall Openings and Holes

Housekeeping

Scaffolding/Ladders

Stairways/Handrails

#### 15. Job Safety Analysis / Pre-Job Planning

Overview

Roles and Responsibilities of Hazard Identification

JSA Elements (Job steps, Hazard Identification, Mitigation)

#### 16. Personal Protective Equipment, Respiratory

PPE Overview

Eliminate - Control - Protect

Selection, Fit, Adjustment of PPE

Eye and Face Protection

Head, Foot and Hand Protection

Respiratory Requirements - Types of Respirators

**Hearing Protection** 

Protective Clothing and FRC

#### 17. Prevention of Workplace Violence

Overview

Responsibilities - Recognition and Notification

#### 18. Working at Heights

Overview

Only work to your level of training

Responsibilities - Prevention of dropped objects and falls

Personal Protective Equipment and Inspection Requirements

Equipment for working at heights (Manlifts, Fall Protection Systems)

#### 19. Permit To Work

Overview

Roles and Responsibilities

Types of Permits - Examples: Confined Space, Hot Work, LOTO, etc.

#### 20. Driver Safety / Transportation Safety

20verview / Statistics

No Cell-phone use while driving / Driving Distractions

Valid Driving Licenses / Certifications / Endorsements

Adverse Weather - Road Conditions - Wildlife

Fatigue

Vehicle condition/inspections

Journey Management

Backing/Parking/Location Hazards

Loading Securement and Off-loading

Seatbelt usage

Driving under the influence

#### 21. ENVIRONMENTAL

Federal and State Regulations & Compliance and Reporting

Roles and Responsibilities

Response and Reporting of discharges, leaks & spills

Minimize waste

All wastes go in specific containers

Overview of HAZWOPER

#### 22. EXCAVATION - TRENCHING & SHORING

Overview

Identification of Underground Hazards / ONE CALL – 811

Levels of Training / Competency Requirements

Safe Work Practices / Procedures / Permits

Hazards Recognition and Mitigation

Use of Personal Protective Equipment

Hazardous Atmospheres

**Emergency Response Plans** 

#### 23. Industrial Hygiene / Occupational Health

Overview

Roles and Responsibilities

Exposure Types - Skin contact, Inhalation, Ingestion, Radiation (Ionizing & Non-Ionizing), Noise, etc.

Common Hazards - Benzene, Lead, H2S, CO2, NORM, Mercury, Diethanolamine,

Hexavalent chromium, methanol, welding fume, N2, Fibers (Asbestos, Mineral, etc.),

Fumes, Liquids, Weather, Dust, Biological, etc.

Monitoring and Mitigation

Thermal Stress

#### 24. Site Specific Hazards and Emergency Evacuation

Banned Items - Weapons i.e. Firearms, ammunition, clubs, etc., Illegal drugs, Alcohol,

Lighters/matches, Explosives

New Personnel - Short Service Program (Identification, Mentoring, etc.)

Reporting to Work - Fitness for Duty

Emergency Planning/Response (alarms, muster areas, etc.)

Wildlife

Weather Conditions - Lightning, Windstorm, Hurricane, Tornado, UV exposure, Snow &

Ice, Flooding, etc.

Simultaneous Operations / Communication